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ABSTRACT

This task-based curriculum guide is intended to help secondary teachers provide relevant training for an entry-level job in related building trades procedures. Introductory materials include background information on trade and industrial education and program goals and safety information. Descriptions follow of the construction trades program, vocational cooperative education, work experience/unpaid work experience, work experience and career exploration programs, and vocational work study. This job information is then provided: job titles and a task inventory for related building trades procedures. Tasks are grouped under these 13 duties: planning; preparing the site; installing insulation; installing drywall; installing floor covering; installing heating/cooling systems; roughing in heating/cooling systems; installing and servicing electrical circuits, components, and motors; servicing controls; servicing air conditioning/heating systems; landscaping; operating business; and using employability skills. Duty tabs comprise the largest portion of the curriculum guide. Each task in the listing is presented in a one-page format that provides this information: duty, task, achievement indicators, criteria, tools and equipment, and resources. Other components of the curriculum guide include a student achievement record, a class achievement record, and a glossary of vocational terms. (YLB)

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MICHIGAN TRADE & INDUSTRIAL EDUCATION
CURRICULUM GUIDE

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INTRODUCTION

The Michigan Department of Education, Vocational-Technical Education Service, has adopted descriptions and codes for vocational-technical education programs found in the document entitled, "A Classification of Instructional Programs" (C.I.P.) National Center for Educational Statistics, February, 1981. This new coding system is required of all states in reporting data on all programs receiving funds under P.L. 94-482, the Vocational Education Amendments of 1976.

The current United States Office of Education (U.S.O.E.) coding system was discontinued at the conclusion of the 1981-82 school year. The 1982-83 school year is a transition year from the U.S.O.E. code system to the new C.I.P. Code system.

This Michigan Trade and Industrial Education Curriculum Guide uses the new C.I.P. program description code(s) and lists the entry level job titles associated with the occupational program area by the Dictionary of Occupational Titles (Fourth Edition, 1977), D.O.T. Code, and the Michigan Occupational Information System, (M.O.I.S.), Numerical Index code. NOTE: This information is located under Job Information with program description(s).

PROGRAM DEFINITIONS/GOALS

Vocational Education

The term "vocational education" means organized educational programs which are directly related to the preparation for paid or unpaid employment or for additional preparation for a career requiring other than a baccalaureate or advanced degree.[1]

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[1]The Education Amendments of 1976, Section 195(1), Public Law 94-482.

Goals of Vocational-Technical Education

(1) To provide persons with differing sex, age, racial/ethnic backgrounds, social-economic status, academic disadvantage, economic disadvantage, limited English speaking ability, physical and mental capabilities, and geographical location access to vocational-technical education training or retraining.

(2) To coordinate pre-vocational exploration, career guidance, and placement programs so that each student may make informed and realistic occupational choices and have access to quality placement programs.

(3) To provide all students with learning experiences which are realistic and sufficient in light of their occupational objective.

(4) To insure that all vocational-technical programs will be planned, monitored, and evaluated in light of actual or anticipated employment opportunities and the demand by students for programs related to their abilities and occupational objectives.

Trade and Industrial Education

A vocational education curriculum that includes programs for manufacturing, construction, mechanical service, public service, health service, technical, and fisheries occupations, that prepares a person for entry level employment, upgrading or retraining in a semiskilled or skilled trade, semiprofessional or technical occupation, not generally classified as Agriculture, Distributive, Business or Office, in the Health profession, or Consumer/Home Economics in nature.

NOTE: The occupational clusters found within the scope of trade and industrial education include skilled or semiskilled trade, craft, or occupations which directly relate to the designing, producing, processing, assembling, maintaining, servicing, or repairing of any manufactured product.

TRADE AND INDUSTRIAL EDUCATION STUDENT ORGANIZATION

VICA

The Vocational Industrial Clubs of America (VICA) is the national organization serving trade, industrial, technical, and health occupations students in the United States. VICA incorporates leadership, citizenship, and character

development programs and activities into the skill training offered in America's schools and taught by men and women who have worked in the occupational areas in which they now instruct their students.

VICA emphasizes respect for the dignity of work, high standards in trade ethics, workmanship, scholarship, and safety. VICA promotes understanding of the free enterprise system and encourages development of patriotism through the practice of democracy within the club.

Competitive activities in the trade skills as well as areas such as public speaking, job interview, parliamentary procedure and safety are vital aspects of VICA's program.

TRADE AND INDUSTRIAL EDUCATION CURRICULUM GUIDE

This Michigan Trade and Industrial Education Curriculum Guide is the result of a project funded by the Michigan State Board of Education and the Michigan Department of Education, Vocational-Technical Education Service. The project is located at Michigan State University in the College of Agriculture and Natural Resources' Education Institute (ANREI) and is known as the Curriculum Resource Team.

The project is directed by Dr. Chris M. Olson and Ms. Carol E. Culpepper, Faculty Specialist, Curriculum Resource Team Coordinators. They were responsible for developing the curriculum format and working with a task force leader and committee of individuals from business, industry, and education to ensure the quality of the curriculum. The development of this curriculum was monitored by Melvin France, Secondary Trade and Industrial Education Supervisor.

The names of the occupational task force leader(s) committee members, secretaries, and other support staff are acknowledged after this Introduction.

The occupational program area(s) selected for curriculum development are based on a Vocational-Technical Education Service prioritized program

ranking based on employment demand, State average percent of placement, reimbursed enrollments, the number of programs, and entry level wages within the State of Michigan.

This curriculum guide was developed from the results of a statewide survey and job analysis of incumbent workers in the related occupational areas.

The curriculum guide is representative of the occupational job duty categories which list major activities and tasks performed on an entry level job. The curriculum guide contains a resource list and criteria statements which indicate the minimum standards of performance accepted as evidence of competence in completion of the task by business and industry. This is a task-based curriculum guide which helps a teacher develop a classroom management system where students learn by doing. It is based on task analysis and reflects the skills, knowledge, and attitudes that employers expect incumbent workers to possess.

The curriculum is linked to the labor market, helps the instructor open communication channels with business and industry, and manage classroom instruction where students learn "Need-to-Know" instead of "Nice-to-Know" facts.

This curriculum is adaptable for special needs/handicapped students, helps to validate the program, prepares students for entry level jobs and helps students to make career choices related to job placement.

It is the intent by all those involved in the development of this curriculum guide that it be used to provide relevant training or retraining for employment in the world of work.

The secondary occupational programs/courses in Michigan should meet the following minimum standards to assure soundness and quality of instruction:

(1) The program of instruction must be based on a consideration of the skills and knowledge required in the occupation for which the

instruction is being provided, and includes a planned logical sequence for those essentials of education or experience deemed necessary for the individual to meet an occupational objective.

(2) The program of instruction must be developed and conducted in consultation with a Local Advisory Council/Committee which has an appropriate representation of both sexes and an appropriate representation of racial and ethnic minorities found in the program area, school, and community origin. The local advisory council will advise on current job needs, relevance of programs, and courses in meeting current job needs and consult with the local educational agency in developing program application.

(3) The program of instruction will include the most up-to-date curriculum based on the competencies required in the occupation or occupational field in which the individual is being prepared, upgraded, or updated.

(4) The program of instruction will be sufficiently extensive in duration and intensive within a schedule unit of time to enable the student to develop the necessary knowledge, attitudes, and skills necessary for employment in the occupation or occupational field.

(5) The program of instruction will combine and coordinate related instruction with field, shop, laboratory, cooperative work, or other occupational experience which is appropriate to the vocational objective of the student, is of sufficient duration to develop competencies necessary for employment in the occupation or occupational field, and supervised, directed, or coordinated by a person qualified under the State Plan.

Facilities, equipment, and instructional materials:

(1) Classrooms, libraries, shops, laboratories, and other facilities, including instructional equipment, supplies, teaching aids, and other materials will be adequate in supply and quality to meet the standards approved by the State Board so that such facilities are adequate to enable those who are to be trained to meet the occupational objective for which the education is intended.

(2) If the State Board or local educational agency cannot provide adequate facilities and materials, and such are available in a business or industrial establishment, funds may be used to reimburse the local public educational agency for training programs conducted in private industry when it complies with the training standards and regulations established by the State Board. Such instruction shall be under the supervision and administration of a local public educational agency.

ACKNOWLEDGEMENT

The Michigan Trade and Industrial Curriculum Guide(s) were developed through a series of workshops held throughout the State and at Michigan State University during the 1982-83 school year.

Appreciation is given to all who have contributed their thoughts, time and energy to this curriculum project.

The Michigan Department of Education, Vocational-Technical Education Service, is indebted to the following individuals who were instrumental in the completion of this project and the development of the materials:

MSU Curriculum Resource Team

Dr. Chris M. Olson, Director
Ms. Carol Culpepper, Faculty Specialist
Ms. Carol A. Fosburg, Project Secretary

MSU Curriculum Resource Team
101 Wills House
Michigan State University
East Lansing, MI 48824

V-TES

Dr. Ed Cory, Vocational Education Consultant
Melvin France, Vocational Education Consultant
Ms. Irene Darrow, Secretary
Ms. Christy Erickson, Secretary

Michigan Department of Education
Vocational-Technical Education Service
P. O. Box 30009
Lansing, MI 48909

Construction Trades

Barry Smith (Task Force Leader)
St. Clair County Skill Center
499 Range Road; POCS-1
Marysville, MI 48040

Steve Barnum (Task Force Leader)
Lakewood High School
Route 3, Velte Road
Lake Odessa, MI 48849

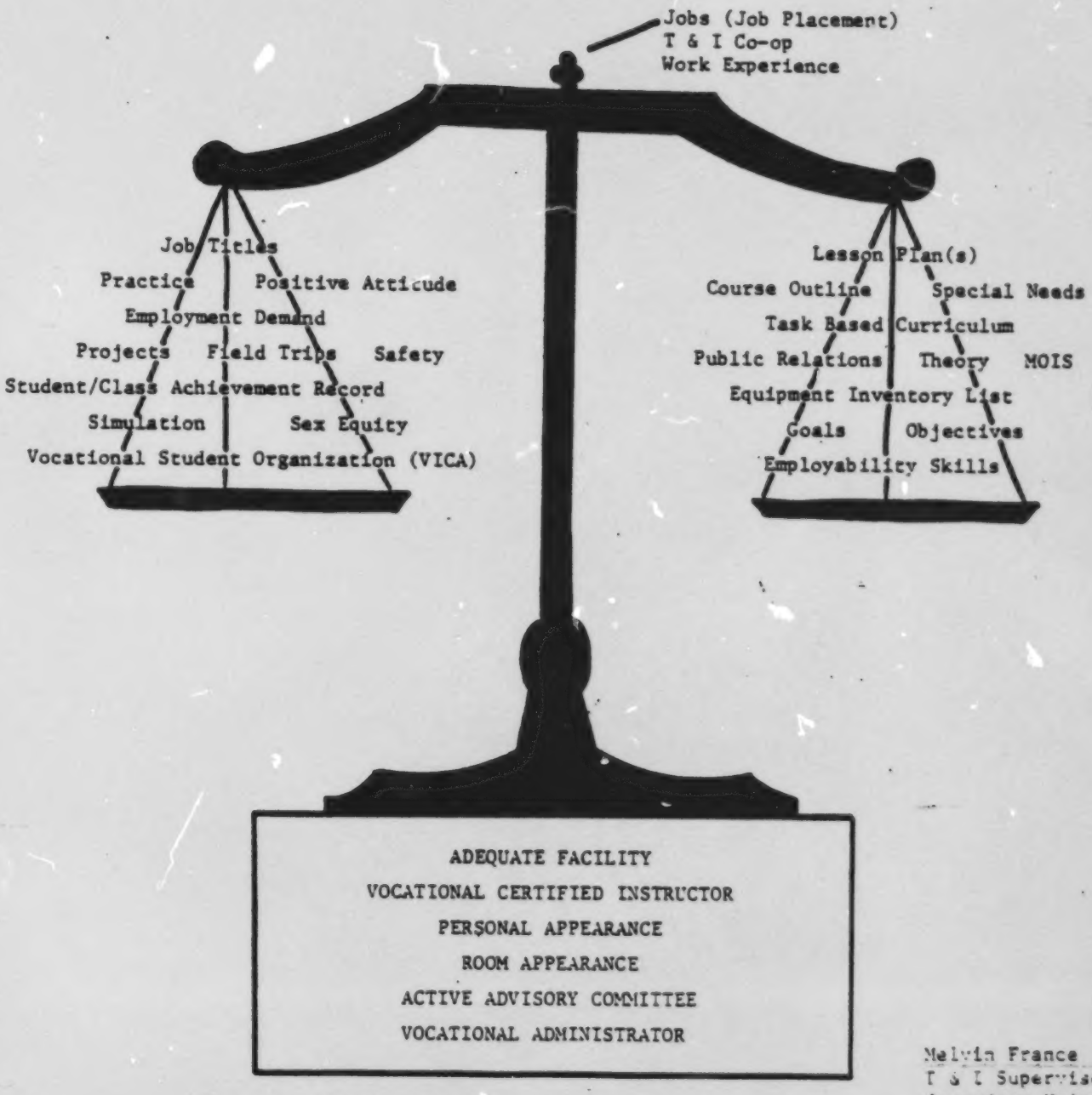
Lee Beauchamp
Niles High School
1441 Eagle Street
Niles, MI 49120

Duane Olds
Northeast Oakland Vocational
Education Center
1371 N. Perry Street
Pontiac, MI 48058

Robert Westdorp
Branch Area Career Center
366 Morse Street, Box 509
Coldwater, MI 49036

MICHIGAN TRADE AND INDUSTRIAL EDUCATION

IS YOURS A BALANCED PROGRAM?



Melvin France
T & I Supervisor
Secondary Unit

DEPARTMENT OF EDUCATION

STATE BOARD OF EDUCATION

EYE PROTECTIVE DEVICES

Filed with Secretary of State,

These rules take effect 15 days after filing with the Secretary of State

(By authority conferred on the state board of education by section 585a of Act No. 269 of the Public Acts of 1955, as added, being section 340.585a of the Compiled Laws of 1948.)

R 340.1301. Definitions.

Rule 1. As used in these rules:

(a) "Caustic" or "acid" means a material, exclusive of hot water or steam, capable of destroying, eroding or burning of flesh by chemical action.

(b) "Explosive material" means a substance capable of a large-scale, rapid and spectacular expansion which will propel materials in a manner causing injury to the human body.

(c) "Hot liquid" or "solid" means a material having effects that are physically harmful to the eyes.

(d) "Sanitizing" means the disinfecting and cleaning of eye protective devices before use.

(e) "When exposure to eye danger exists" means the exposure when a person is within that distance from sparks, flying particles, rays, molten metal, fumes, glare, glass breakage or chemical splash that such an object or condition could cause damage to his eyes, if he was not using a protective device.

R 340.1302. Educational courses requiring eye protection.

Rule 2. A public educational agency which enrolls students in the following courses when exposure to eye danger exists, shall furnish eye protective devices: vocational or industrial arts shops or laboratories involving the use of or working with hot molten metals, milling, sawing, turning, shaping, grinding, cutting or stamping of any solid materials; heat treatment, tempering or kiln firing of any metal or other materials; gas or electric arc welding; repair or servicing of any vehicles; caustic or explosive materials; or chemical or combined chemical-physical laboratory work involving acid, caustic or explosive chemicals or hot liquids or solids.

R 340.1303. Standards for devices.

Rule 3. (1) An eye protective device shall meet the following standards based upon the operation involved:

(a) Acetylene burning, acetylene cutting, and acetylene welding operations - welding goggles of eyecup type with tinted lenses or welding goggles of coverspec type with tinted lenses or welding goggles of coverspec type with tinted plate lenses. This protects against the primary hazards of sparks, harmful rays, molten metal and flying particles.

(b) Chemical handling operations - goggles of flexible fitting with hooded ventilation or face shield with plastic or mesh window. This protects against the primary hazards of splash, acid burns and fumes.

(c) Chipping operations - goggles of flexible fitting with regular ventilation or goggles of cushioned fitting with rigid body or spectacles of metal frame with sideshields or spectacles of plastic frame with sideshields or spectacles of metal-plastic frame with sideshields or chipping goggles of eyecup type with clear safety lenses or chipping goggles of coverspec type with clear safety lenses. This protects against the primary hazard of flying particles.

(d) Electric (arc) welding operations - welding goggles of coverspec type with tinted plate lenses or welding helmets or welding helmet in combination with tinted lens spectacles. This protects against the primary hazards of sparks, intense rays and molten metal.

(e) Furnace operations - welding goggles of eyecup type with tinted lenses or welding goggles of coverspec type with tinted lenses or welding goggles of coverspec type with tinted plate lenses. This protects against the primary hazards of glare, heat and molten metal.

(f) Light grinding, machining, and spot welding operations - goggles of flexible fitting with regular ventilation or goggles of cushioned fitting with rigid body or spectacles of metal frame with sideshields or spectacles of plastic frame with sideshields or spectacles of metal-plastic frame with sideshields or face shield with plastic or mesh window. This protects against the primary hazards of flying particles and sparks.

(g) Heavy grinding operations - goggles of flexible fitting with regular ventilation or goggles of cushioned fitting with rigid body or chipping goggles of eyecup type with clear safety lenses or chipping goggles of coverspec type with clear safety lenses or in case of severe exposure add face shield with plastic or mesh window. This protects against the primary hazard of flying particles.

(h) Laboratory operations - goggles of flexible fitting with hooded ventilation or face shield in combination with metal or plastic frame spectacles with sideshields. This protects against the primary hazards of chemical splash and glass breakage.

(i) Molten metal operations - welding goggles of eyecup type with tinted lenses or welding goggles of coverspec type with tinted lenses or face shield in combination with metal or plastic frame spectacles with sideshields and tinted lenses. This protects against the primary hazards of heat, glare, sparks and splash.

(2) The standards described in subrule (1) are taken from the American National Standards Safety Code Z87.1-1968, figure 8, page 28, which is available from the American National Standards Institute, Incorporated, 1430 Broadway, New York, New York 10018, at a cost of $5.00. Applicable excerpts from the American National Standards Safety Code are available at no cost from the Michigan department of education, Lansing, Michigan.

R 340.1304. Sanitization of devices.

Rule 4. An eye protective device shall be sanitized when 2 or more students use the same device, by either:

(a) Washing after each use in warm water and soap or detergent, followed by a rinse in running water.

(b) Placing in a cabinet with ultraviolet light and washing once a week as in subdivision (a).

R 340.1305. Compliance.

Rule 5. (1) A superintendent of a school district shall certify to the intermediate school district superintendent not later than the second week of each school year, on forms prescribed by the Michigan department of education, that eye protective devices meeting the standards of these rules have been obtained. For the school year 1972-73, certification shall be made within 4 weeks after the effective date of these rules. This certification shall also indicate that instructors have been informed that all students, teachers and visitors shall wear the devices when exposure to eye damage exists, as identified in these rules.

(2) An intermediate school district superintendent shall report to the state superintendent of public instruction by October 1 the names of those constituent school districts which are not in compliance with these rules. For the school year 1972-73, the report shall be made within 6 weeks after the effective date of these rules.

(3) The state superintendent of public instruction shall notify a school district in violation of these rules that it shall comply or show cause why compliance cannot be made within 30 days.

ACT NO. 54 OF THE PUBLIC ACTS OF 1972

ENROLLED SENATE BILL NO. 553

AN ACT to amend Act No. 269 of the Public Acts of 1955, entitled "The Michigan School Code", and to repeal certain acts and parts of acts, as amended, being sections 340.1 to 340.984 of the Compiled Laws of 1948, by adding section 585a.

The People of the State of Michigan enact:

Section 1. Act No. 269 of the Public Acts of 1955, as amended, being sections 340.1 to 340.984 of the Compiled Laws of 1948, is amended by adding section 585a to read as follows:

Sec. 585a. (1) Every pupil and teacher participating in a course mentioned in this section shall wear industrial quality eye protective devices, which have been sanitized prior to use, when exposure to danger exists while participating in such course. The board of education shall furnish the devices for pupils, teachers and visitors to the classrooms or laboratories. The courses for which protective devices are required are:

(a) Vocational or industrial arts shops or laboratories involving the use of or working with hot molten metals, milling, sawing, turning, shaping, grinding, cutting or stamping of any solid materials; heat treatment, tempering or kiln firing of any metal or other materials; gas or electric arc welding; repair or servicing of any vehicle; or caustic or explosive materials.

(b) Chemical or combined chemical-physical laboratory work involving acid, caustic or explosive chemicals or hot liquids or solids.

(2) "Industrial quality eye protective devices" means devices meeting the standards of the american standard safety code for head, eye and respiratory protection, Z87.1-1968, promulgated by the american standards association, incorporated.

(3) The provisions of this section shall be enforced pursuant to rules promulgated by the state board of education in accordance with and subject to Act No. 306 of the Public Acts of 1969, as amended, being sections 24.201 to 24.315 of the Compiled Laws of 1948.

Section 2. This amendatory act shall take effect September 1, 1972.

The following adapted from the:

NATIONAL STANDARD SCHOOL SHOP SAFETY INSPECTION CHECK LIST

Prepared by the Joint Safety Committee of the
AMERICAN VOCATIONAL ASSOCIATION — NATIONAL SAFETY COUNCIL

_____ Date_____

_____

INTRODUCTION

A safe environment is an essential part of the school shop safety education program. The safe environment will exist only if hazards are discovered and corrected through *regular* and *frequent* inspections by school personnel—administrators, teachers and students. Safety inspections are to determine if everything is satisfactory.

Inspections may be made at the request of the board of education, the school administration or upon the initiative of the teacher. Some communities have drawn upon the cooperative service of professional safety engineers, inspectors of state labor departments, insurance companies and local safety councils to supplement and confirm inspections by school personnel.

The National Standard School Shop Safety Inspection Check List, recommended by the President's Conference on Industrial Safety is an objective inspection procedure for the school shop.

DIRECTIONS

WHO INSPECTS?

This will depend upon local policies. It is recommended, however, that shop teachers, and students—the student safety engineer and/or student safety committee—participate in making regular inspections. This not only tends to share responsibility but stimulates a broader interest in the maintenance of a safe school shop.

WHEN TO INSPECT?

As a minimum, a safety inspection should be made at the beginning of every school term or semester. More frequent inspections may be advisable.

HOW TO INSPECT?

Inspections should be well planned in advance.

Inspections should be systematic and thorough. No location that may contain a hazard should be overlooked.

Inspection reports should be clear and concise, but with sufficient explanation to make each recommendation for improvement understandable.

FOLLOW-UP

The current report should be compared with previous records to determine progress. The report should be studied in terms of the accident situation so that special attention can be given to those conditions and locations which are accident producers.

Each unsafe condition should be corrected as soon as possible in accordance with accepted local procedures.

A definite policy should be established in regard to taking materials and equipment out of service because of unsafe conditions.

The inspection report can be used to advantage as the subject for staff and class discussion.

CHECKING PROCEDURE

Draw a circle around the appropriate letter, using the following letter scheme:

S — Satisfactory (needs no attention)
A — Acceptable (needs some attention)
U — Unsatisfactory (needs immediate attention)

Recommendations should be made in all cases where a "U" is circled. Space is provided at the end of the form for such comments. Designate the items covered by the recommendations, using the code number applicable (ex B-3).

In most categories, space is provided for listing of standards, requirements or regulations which have local application only.

A. GENERAL PHYSICAL CONDITION

1. Machines, benches, and other equipment are arranged so as to conform to good safety practices..... S A U
2. Condition of stairways..... S A U
3. Condition of aisles..... S A U
4. Condition of floors..... S A U
5. Condition of walls, windows, and ceiling..... S A U
6. Illumination is safe, sufficient, and well placed..... S A U
7. Ventilation is adequate and proper for conditions..... S A U
8. Temperature control..... S A U
9. Fire extinguishers are of proper type, adequately supplied, properly located and maintained..... S A U
10. Teacher and pupils know location of and how to use proper type for various fires..... S A U
11. Number and location of exits is adequate and properly identified..... S A U
12. Proper procedures have been formulated for emptying the room of pupils and taking adequate precautions in case of emergencies S A U
13. Lockers are inspected regularly for cleanliness and fire hazards. S A U
14. Locker doors are kept closed..... S A U
15. Walls are clear of objects that might fall..... S A U
16. Utility lines are properly identified..... S A U
17. Teachers know the procedure in the event of fire including notification of the fire department and the evacuation of the building. S A U
18. Air in shop is free from excessive dust, smoke, etc.... S A U
19. _____ S A U
20. _____ S A U
21. _____ S A U
22. _____ S A U
23. Evaluation for the total rating of A. GENERAL PHYSICAL CONDITION..... S A U

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B. HOUSEKEEPING

1. General appearance as to orderliness..... S A U
2. Adequate and proper storage space for tools and materials. S A U
3. Benches are kept orderly..... S A U
4. Corners are clean and clear..... S A U
5. Special tool racks, in orderly condition, and provided at benches and machines..... S A U
6. Tool, supply, and/or material room is orderly..... S A U
7. Sufficient scrap boxes are provided..... S A U
8. Scrap stock is put in scrap boxes promptly..... S A U
9. Materials are stored in an orderly and safe condition.. S A U
10. A spring lid metal container is provided for waste and oily rags. S A U
11. All waste materials and oily rags are promptly placed in the containers..... S A U
12. Containers for oily rags and waste materials are frequently and regularly emptied..... S A U
13. Dangerous materials are stored in metal cabinets..... S A U
14. Machines have been color conditioned..... S A U
15. Safety cans are provided for flammable liquids..... S A U
16. Bulk storage of dangerous materials is provided outside of the main building..... S A U
17. A toe-board or railing around a mezzanine used for storage or washing facilities..... S A U
18. Materials are stored in an orderly and safe condition on this mezzanine..... S A U
19. Flammable liquids are not used for cleaning purposes S A U
20. Floors are free of oil, water and foreign material..... S A U
21. Floors, walls, windows, and ceilings are cleaned periodically. S A U
22. _____ S A U
23. _____ S A U
24. _____ S A U
25. _____ S A U
26. Evaluation for the total rating for B. HOUSEKEEPING S A U

C. EQUIPMENT

1. Machines are arranged so that workers are protected from hazards of other machines, passing students, etc..... S A U
2. Danger zones are properly indicated and guarded..... S A U
3. All gears, moving belts, etc., are protected by permanent enclosure guards..... S A U
4. All guards are used as much as possible..... S A U

C. EQUIPMENT (continued)

5. All equipment control switches are easily available to operato
6. All machines are "locked off" when instructor is out of [redacted] S A
7. Brushes are used for cleaning equipment..... S A
8. Nonskid areas are provided around machines..... S A
9. Machines are in safe working condition..... S A
10. Machines are guarded to comply with American Standards Association and local state code..... S A
11. Adequate supervision is maintained when students are using machines and dangerous tools..... S A
12. Tools are kept sharp, clean and in safe working order S A
13. All hoisting devices are in safe operating condition... S A
14. Machines are shut off while unattended..... S A
15. Adequate storage facilities for tools, equipment, etc., not in immediate use..... S A
16. _____ S A
17. _____ S A
18. _____ S A
19. _____ S A
20. Evaluation for the total rating for C. EQUIPMENT.. S A

D. ELECTRICAL INSTALLATION

1. All switches are enclosed..... S A
2. There is a master control switch for all of the electrical installations..... S A
3. Electrical outlets and circuits are properly identified.. S A
4. All electrical extension cords are in safe condition and are not carrying excessive loads..... S A
5. All machine switches are within easy reach of the operators. S A
6. Electrical motors and equipment are wired to comply with the National Electric Code..... S A
7. Individual cut-off switches are provided for each machine. S A
8. Machines are provided with overload and underload controls by magnetic pushbutton controls..... S A
9. No temporary wiring in evidence..... S A
10. _____ S A
11. _____ S A
12. _____ S A
13. _____ S A
14. Evaluation for the total rating for D. ELECTRICAL INSTALLATION [redacted]

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E. GAS

1. Gas flow to appliances is regulated, so that when appliance valve is turned on full, the flames are not too high..... S A U

2. Gas appliances are properly insulated with asbestos or other insulating material from tables, benches, adjacent walls, or other flammable materials ..... S A U

3. No gas hose is used where pipe connections could be made. S A U

4. Gas appliances have been adjusted so that they may be lighted without undue hazard..... S A U

5. Students have been instructed when lighting gas appliances to light the match first before turning on the gas..... S A U

6. There are no gas leaks, nor is any odor of gas detectable in any part of the shop..... S A U

7. Shop instruction has been given concerning the lighting of gas furnaces operating with both air and gas under pressure.. S A U

8. When lighting the gas forge, goggles are worn..... S A U

9. When lighting the gas furnace, the following procedure is used: (a) light the match; (b) turn on the gas; (c) drop the match in the hole in top of the furnace..... S A U

10. In shutting down the gas furnace, the gas valve is closed before the air valve..... S A U

11. _____ S A U

12. _____ S A U

13. _____ S A U

14. _____ S A U

15. Evaluation for the total rating for E. GAS..... S A U

F. PERSONAL PROTECTION

1. Goggles or protective shields are provided and required for all work where eye hazards exist..... S A U

2. If individual goggles are not provided, hoods and goggles are properly disinfected before use..... S A U

3. Shields and goggles are provided for electric welding.. S A U

4. Rings and other jewelry are removed by pupils when working in the shop..... S A U

5. Proper kind of wearing apparel is worn and worn properly for the job being done..... S A U

6. Leggings, safety shoes, etc., are worn in special classes such as foundry, etc., when needed..... S A U

7. Respirators are provided for dusty or toxic atmospheric conditions such as when spraying in the finishing room..... S A U

8. Provisions are made for cleaning and sterilizing respirators. S A U

9. Students are examined for safety knowledge ability.. S A U

10. Sleeves are rolled above elbows when operating machines. S A U

11. Clothing of students is free from loose sleeves, flopping ties, loose coats, etc. ..... S A U

12. _____ S A U

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F. PERSONAL PROTECTION (continued)

13. _____ S A U

14. _____ S A U

15. _____ S A U

16. Evaluation for the total rating for F. PERSONAL PROTECTION. S A U

G. INSTRUCTION

1. Shop Safety is taught as an integral part of each teaching unit. S A U

2. Safety rules are posted particularly at each danger station. S A U

3. Printed safety rules are given each student..... S A U

4. Pupils take a safety pledge..... S A U

5. Use of a safety inspector..... S A U

6. Use of a student shop safety committee..... S A U

7. Use of safety contests..... S A U

8. Motion and/or slide films on safety are used in the instruction. S A U

9. Use of suggestion box..... S A U

10. Use of safety tests..... S A U

11. Use of safety posters..... S A U

12. Talks on safety are given to the classes by industrial men. S A U

13. Tours are taken of industrial plants as a means of studying safety practices ..... S A U

14. Periodic safety inspections of the shop are made by a student committee ..... S A U

15. Men from industry make safety inspections of the shop S A U

16. Student shop safety committee investigates all accidents S A U

17. A proper record is kept of safety instructions which are given, preferably showing the signature of student on tests given in this area ..... S A U

18. Rotate students on the Shop Safety Committee so that as many students as possible have an opportunity to participate... S A U

19. _____ S A U

20. _____ S A U

21. _____ S A U

22. _____ S A U

23. Evaluation for the total rating of G. INSTRUCTION S A U

H. ACCIDENT RECORDS

1. There is a written statement outlining the proper procedure when and if a student is seriously hurt..... S A U

2. Adequate accident statistics are kept..... S A U

3. Accidents are reported to the proper administrative authority by the instructor ..... S A U

H. ACCIDENT RECORD (continued)

4. A copy of each accident report is filed with the State Department of Education ..... S A U

5. Accident reports are analyzed for instructional purposes and to furnish the basis for elimination of hazards..... S A U

6. _____ S A U

7. _____ S A U

8. _____ S A U

9. _____ S A U

10. Evaluation for the total rating of H. ACCIDENT RECORDS. S A U

I. FIRST AID

1. An adequately stocked first aid cabinet is provided... S A

2. The first aid is administered by a qualified individual S A

3. The school has individuals qualified to administer first aid. S A

4. _____ S A

5. _____ S A

6. _____ S A

7. _____ S A

8. Evaluation for the total rating of I. FIRST AID.... S A

RECOMMENDATIONS

Code No.

For additional copies in packets of 50 send $1.45 to National Safety Council, 444 North Michigan Avenue, Chicago, Ill. 60611

Revd. 6/76
Rep. 10M57601

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C.I.P. PROGRAM DESCRIPTION

46.0000 Construction Trades

A summary of groups of instructional programs that prepare individuals to erect, install, maintain, and repair buildings, highways, airports, missile sites, and other structures using materials such as metal, wood, stone, brick, glass, concrete, and composition substances. Includes instruction in cost estimating; cutting, fastening, and fitting various materials; the use of hand and power tools; and in following technical specifications and blueprints.

Course 01 Construction - On-Site

An approved instructional program that prepares individuals in the accomplishment of the tasks for CIP Code 46.0000 where a product or service is rendered to certain private individuals or public sectors of the surrounding community. The most frequent products of this activity are residential housing units which are sold by the LEA or a third party. Included in this code are programs dealing specifically with residential house construction, modular home, or shed building where such units are sold at a set price or on a bid price system. This code also deals with renovation or add on types of construction where building supplies and/or materials are provided or donated for use in a permanent structure or product.

Course 02 Construction - In-School

An approved instructional program that prepares individuals in the accomplishment of the tasks for CIP Code 46.0000 utilizing the mock-up, build-up, teardown concept of instruction. Included in this definition would be programs specifically dealing with simulation of residential and commercial construction, in a school setting, with experience gained in wall building, wiring, roofing, masonry, concrete work, tools of the trade and all other skills which may be acquired in a classroom or laboratory setting. An in-school program is a higher cost program because the building materials are consumed on a one-time basis which necessitates the purchasing of significant materials for each section. The materials are not sold, but are utilized in the natural course of instruction.

VOCATIONAL COOPERATIVE EDUCATION

Definition

"The term 'cooperative education' means a program of vocational education for persons who, through written cooperative arrangements between the school and employers, receive instruction, including required academic courses and related vocational instruction by alternation of study in school with a job in any occupational field, but these two experiences must be planned and supervised by the school and employers so that each contributes to the student's education and to his or her employability. Work periods and school attendance may be on alternate half days, full days, weeks, or other periods of time in fulfilling the cooperative program." (P.L. 94-482)

Responsibilities of School District

The local school district must meet all the Federal requirements of P.L. 94-482, Section 122; 45 CFR 104.531 through 104.533 and the State of Michigan Statutes and General School Laws listed below:

A. IT IS A PROGRAM OF VOCATIONAL EDUCATION.

"Vocational program" means laboratory, simulation or instruction based upon individually designed learning experiences in a vocational subject preparing the student for competencies required in a recognized occupation coded in accordance with the most recent vocational education listing of programs by the United States Department of Education.

B. THERE IS A WRITTEN AGREEMENT BETWEEN THE SCHOOL AND EMPLOYERS.

The Youth Employment Standards Act (P.A. 90 of 1978) governs the legal employment of minors in Michigan. In section 18 of the Act, a provision is made to allow a written agreement, or contract, to be entered into between an employer and the board of education of the school district, in which the minor is enrolled. This written agreement exempts a student from obtaining a work permit and allows the student to be legally employed in Michigan. The employment, however, shall not be in violation of a Federal Statute or regulation and a signed copy of the agreement shall be on file in the place of employment before a minor begins employment. The training agreement, in cooperative education, is the legal written agreement developed cooperatively between the employer, teacher-coordinator, student, and parent and outlines the responsibilities of the employer and student to the program and establishes the legal conditions of the student-learner's employment.

C. THERE IS INSTRUCTION (INCLUDING REQUIRED ACADEMIC INSTRUCTION) IN SCHOOL RELATED TO THE JOB IN ANY OCCUPATIONAL AREA.

The program is of sufficient duration to develop competencies necessary to prepare the learner for employment. It provides a coordinated instructional program combining supervised part-time employment and

classroom instruction related to the learner's job. Related vocational instruction for cooperative education enrollees shall be scheduled weekly.

D. THE ALTERNATION OF STUDY AND WORK ARE PLANNED AND SUPERVISED BY THE SCHOOL AND EMPLOYER IN ORDER TO FURTHER THE STUDENT'S EDUCATION AND EMPLOYABILITY.

The student-learner shall be employed for an average of not less than 15 hours per week during the effective time of the individual's program. The school shall have the responsibility of providing coordination and supervision services during such time.

E. STUDENTS ARE EMPLOYED AND COMPENSATED IN CONFORMITY WITH FEDERAL, STATE AND LOCAL LAWS.

The program provides cooperative on-the-job training that (1) employs and compensates student-learners in conformity with Federal, State, and local laws and regulations and in a manner not resulting in exploitation of the student-learner for private gain, and (2) is conducted in accordance with written training agreements between local education agencies and employers.

References

Individuals requiring additional information pertaining to cooperative education principles and practices are asked to consult the Michigan Department of Education, Vocational-Technical Education Service, developed Cooperative Education Handbook available in September of 1981.

WORK EXPERIENCE

PAID WORK EXPERIENCE

Definition

Paid work experience programs are school-sponsored and supervised employment programs. Students are allowed to earn academic credit while employed in the community. The employment serves as a means of acquiring desirable work habits and attitudes towards the world of work. The employment is not necessarily related to a student's career interest and enrollment in a related vocational education program is not required.

Objectives

Paid work experience programs are designed to provide students an opportunity to:

1. Foster positive attitudes about work, school and society
2. Promote an understanding in the dignity of work
3. Develop a student's ability to understand and function in an employer-employee relationship
4. Earn wages to remain in school
5. Experience an alternative to the traditional school program

Guidelines

1. Written work agreements should be completed between the employer, student, parent and school
2. Written work agreements should be completed in conformance to all Federal, State and local laws, rules and regulations; including non-discrimination against any student because of race, color, sex, national origin or ancestry. This policy of non-discrimination shall also apply to otherwise qualified handicapped individuals
3. Related academic instruction, where possible, should be provided
4. A school work experience coordinator should be provided to serve as a liaison between the student, employee, parents and school officials
5. Academic credit should be awarded for participation in the program

Funding

The Michigan Department of Education, the Vocational-Technical Education Service does not fund paid work experience programs.

UNPAID WORK EXPERIENCE

Definition

Unpaid work experience is a school sponsored and supervised instructional technique used in vocational education programs in which students are placed with an employer for a limited time and are not compensated during the duration of the experience.

Objectives

Unpaid work experience programs are designed to provide students with an opportunity to:

1. Receive on-site exposure to various businesses and industries while participating in a related vocational education program
2. Develop a realistic understanding of the relationship between education and the world of work
3. Enhance a positive self-image
4. Assist in the selection of occupational choices
5. Expand learning opportunities by using community resources

Guidelines

1. The training, even though it includes actual operation of the facilities of the participating employer is similar to that given in a vocational school
2. The training is for the benefit of the trainee
3. The trainee does not displace a regular employee, but does work under a regular employee's close observation
4. The participating employer does not derive an immediate advantage from the activities of the trainee
5. The trainee is not necessarily entitled to a job at the conclusion of the training period
6. The trainee is not entitled to wages for the time spent in the training
7. The training is for not more than 45 hours with a participating employer during each school semester
8. The training is conducted under a written work experience training agreement between the school district and the participating employer

Funding

The Michigan Department of Education, the Vocational-Technical Education Service does not fund unpaid work experience but considers it to be an allowable instructional activity under a given vocational education program.

WORK EXPERIENCE AND CAREER EXPLORATION PROGRAM (W.E.C.E.P.)

I. Definition

The Work Experience and Career Exploration Program (W.E.C.E.P.) is a school-supervised and administered program that includes part-time work as an integral part of an educational program aimed at motivating 14 and 15 year-old youth toward education and preparing them for the world of work.

II. Program Objectives

There are several objectives of a W.E.C.E.P. program:

A. To provide a career-oriented educational program for dropout prone youth to become oriented and motivated toward education and the world of work.

B. To increase the desire to learn and improve educational performance.

C. To develop a greater degree of self-confidence, responsibility and aid in the maturation process of the student participants.

D. To provide student participants with on-the-job learning experiences that are in harmony with their interests, needs and objectives.

E. To improve school adjustment of student participants for whom the traditional curriculum is found to be inadequate.

F. To promote personal and social adjustment of the student participants and establish emotional stability through a feeling of being engaged in worthwhile activity.

III. Instructional Content

W.E.C.E.P. programs are planned so as to include part-time work supervised by employers and school personnel, as an integrated part of the enrollee's educational program. Students receive work experience on jobs permitted or approved under Federal or State laws. Students are in class with a W.E.C.E.P. teacher-coordinator for job-related and occupational safety, including needed individualized or remedial instruction. Students also receive a minimum of 20 hours of instruction on the Michigan Occupational Information System (MOIS) and a minimum of 30 hours of employability skills instruction. The students' employment is under the supervision of W.E.C.E.P. teacher-coordinators and employers. Students receive all State required courses necessary for graduation. The W.E.C.E.P. program is planned so that the students' individual academic achievement potential is recognized.

IV. Program Organization

The Vocational-Technical Education Service, Michigan Department of Education requires that W.E.C.E.P. programs in local districts meet the following criteria:

A. Eligibility. Any student aged 14 or 15 years, whom authoritative local school personnel identify as being able to benefit from the program, shall be eligible to participate.

B. Credits. Students shall receive school credits for both in-school related instruction and on-the-job experience.

C. Size. Each program unit shall consist of 12 to 25 students to one W.E.C.E.P. teacher-coordinator.

D. Instructional Schedule. W.E.C.E.P. students will spend a minimum of four periods daily in classroom instruction including one period of 180 hours of instruction devoted to job-related and employability skill instruction, safety and career exploration. Each student will have a minimum of 20 hours of career exploration utilizing the Michigan Occupational Information System (MOIS) and have a minimum of 30 hours of instruction in employability skills training. The employability skills training will equal or exceed the employability skills performance objectives adopted, as part of Michigan Vocational-Technical Service programs. Each local district submitting a letter of application to operate a W.E.C.E.P. program will furnish to the Vocational-Technical Education Service a course outline for the related class.

E. W.E.C.E.P. Teacher-Coordinator. Each program unit shall be under the supervision of a school official to be designated for the purpose of the program as a W.E.C.E.P. teacher-coordinator, who shall generally supervise the program and coordinate the work and education aspects of the program and make regularly scheduled visits to the work stations.

F. Written W.E.C.E.P. Training Agreement. No student shall participate in the program until there has been made a written E.E.C.E.P. training agreement signed by the W.E.C.E.P. teacher-coordinator, the employer and the student. The agreement shall also be signed or otherwise consented to by the student's parent or guardian. The W.E.C.E.P. training agreement will detail job tasks and related in-school instruction. A sample W.E.C.E.P. training agreement will be submitted annually by the local district to the Vocational-Technical Education Service.

G. Provision for Health and Well-Being. Employment under W.E.C.E.P. will not interfere with the schooling of the minors or with their health and well-being.

H. Records and Reports. The names and addresses of each school and the names and addresses of each employer enrolling work experience and career exploration program students and the number of enrollees in each unit shall be kept at the Vocational-Technical Education Service's office. A copy of the written W.E.C.E.P. training agreement for each student participating in the program shall be kept in the local educational office. The records required (for this paragraph) shall be kept for a period of three years from the date of enrollment in the program and shall be made available for inspection or transcription to the representatives of the Administrator of the Wage and Hour Division. Each school district operating a W.E.C.E.P. program shall submit an annual evaluative report by June 30th, which details the results of the W.E.C.E.P. program in terms of attendance and tardiness patterns, grade point average trends and dropout statistics of the enrollees. Based on a favorable state agency evaluation, a local district will be approved on an annual basis to operate a W.E.C.E.P. program. Under no circumstances can a local district operate a W.E.C.E.P. program without first obtaining written state agency approval for the program.

I. Approved Occupations. Employment of minors enrolled in a W.E.C.E.P. program approved pursuant to the requirements of this section shall be permitted in all occupations except the following:

1. Manufacturing and mining.

2. Occupations declared to be hazardous for the employment of minors between 16 and 18 years of age in Subpart E of Part 570 Child Labor Regulations, Orders and Statements of Interpretation of the Federal Fair Labor Standards Act, and occupations in agriculture declared to be hazardous for employment of minors below the age of 16 in Subpart E-1 of this part.

3. Occupations other than those permitted under sections 570.33 and 570.34 except upon approval of a variation in individual cases or classes of cases by the Administrator of the Wage and Hour Division after notice to interested persons and opportunity to be heard.

Employment of minors enrolled in a W.E.C.E.P. program approved pursuant to the requirements of this section shall be confined to not more than 23 hours in any week when school is in session and not more than three hours in any day when school is in session, any portion of which may be during school hours.

Employment of W.E.C.E.P. participants must not have the effect of displacing a worker in the establishment of the employer. Participants in W.E.C.E.P. must be paid according to the statutory minimum wage provision of the Fair Labor Standards Act.

V. Approval of Local Programs

Local school districts desiring approval to operate a W.E.C.E.P. program must submit an annual letter of application by June 30th to the

Michigan Department of Education
Vocational-Technical Education Service
Secondary Unit
Box 30009
Lansing, MI 48909
(517) 373-3365

VOCATIONAL WORK-STUDY

Definition and Purpose

The vocational work-study program is for those students who are in need of earnings from employment in order to commence or continue their vocational education programs.

Administration

The work-study program shall be administered by local educational agencies and made available, to the extent of available funds, to all qualified youth, in the area served by such agencies, who meet requirements.

Eligible Students

Employment under the work-study program shall be furnished only to a student who (a) has been accepted for enrollment or, if already enrolled, is in good standing and in full time attendance as a full-time student in a vocational education program which meets the standards of the state board and of the local educational agency and the requirements of the state plan, (b) is in need of the earnings from such employment to commence or continue a vocational education program, and (c) is at least 15 years of age and less than 21 years of age at the date of commencement of employment and is capable in the opinion of the appropriate school authorities of maintaining good standing in a school program while employed under the work-study program.

Limitation of Hours and Compensation of Employment

No student shall be employed under a vocational work-study program for more than 20 hours in any week in which classes in which the student is enrolled are in session. Summer employment shall not exceed 40 hours per week.

Employers

Employment under work-study programs shall be for the local educational agency or for some other public agency or institution, federal, state, or local and work so performed shall be adequately supervised and coordinated and shall not supplant prasent employees of such agency or institution who ordinarily perform such work. In those instances where employment under work-study programs is for a federal agency or institution, the written arrangement between the local educational agency and the federal agency or institution shall state that students so employed are not federal employees for any purpose.

Amounts Spent for Employment

In each fiscal year during which the work-study program remains in effect, the local educational agency shall expend for employment of its students an amount in state and/or local funds that is not less than the average annual expenditure for work-study programs of a similar nature during the three fiscal years preceding in which the supplementary plan provisons for its work study program are approved.

Applications, Priorities, and Approval

Work-study programs shall be approved on an individual basis by the state board and shall be consistent with the policies and procedures set forth.

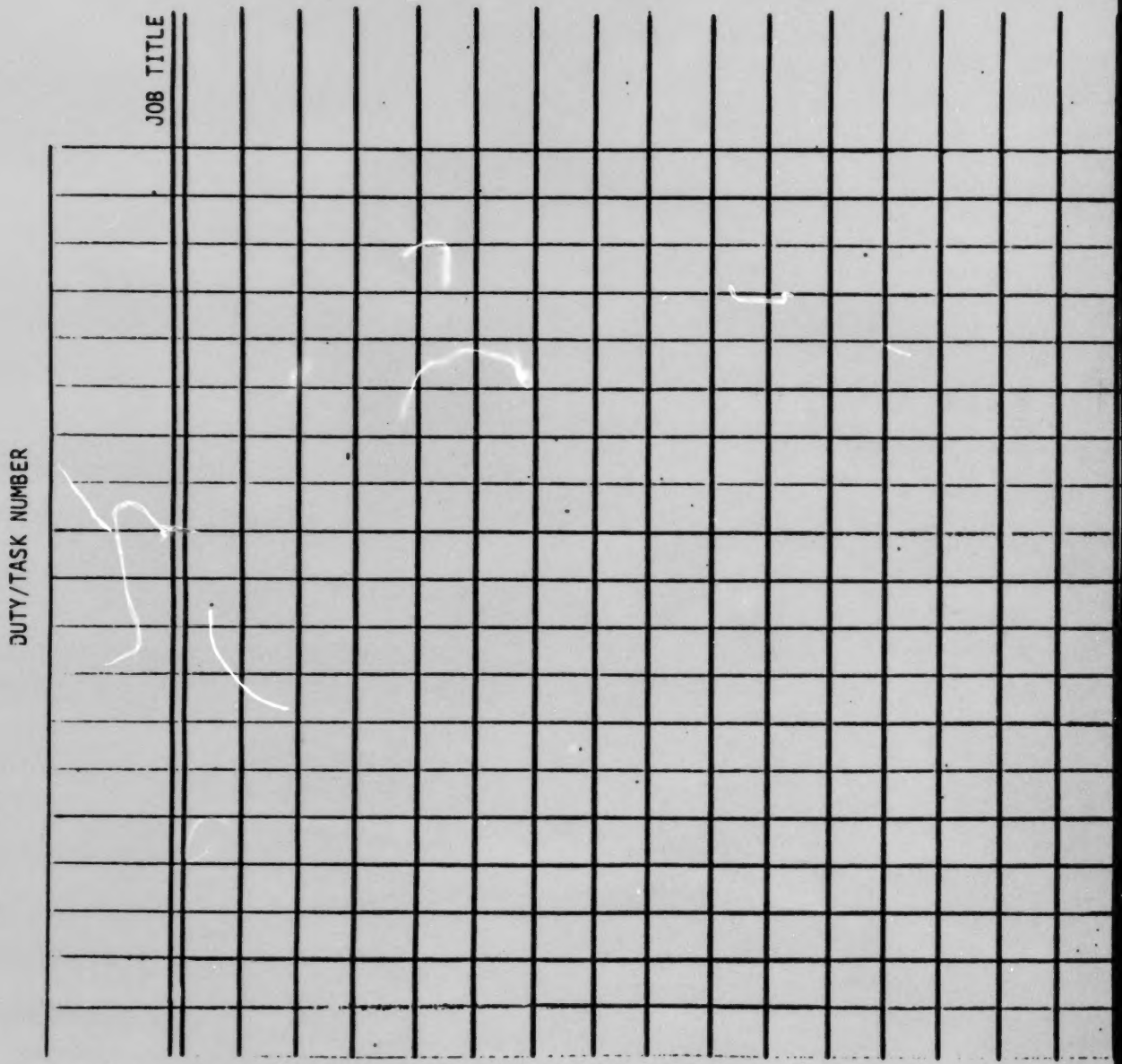
Applications by Local Educational Agencies

Local educational agencies shall submit project proposals to the state board staff for approval in a manner similar to other vocational education programs.

Priority of Projects

Work-study programs will be provided, insofar as financial resources are available, for the undertaking of such programs in the order determined by the application of criteria for determining relative priority of projects which shall include preference for local educational agencies serving communities having substantial numbers of dropouts and unemployed youths and may include other relevant factors such as the extent to which the local educational agencies are using guidance and counseling and other related services designed to achieve the purposes of the work-study program.

DUTY/TASK - JOB MATRIX



TASK LIST
FOR
RELATED BUILDING TRADES
PROCEDURES

A. PLANNING PRIOR TO CONSTRUCTION

1. Apply for permits in sequence of need using appropriate forms to comply with local building codes and requirements.

2. Interpret building codes using local code book to assure conformity with local and state laws.

3. Interpret notations used on blueprints to assure that correct procedures and materials are used.

4. Estimate labor costs using plans and specifications to prepare a bid for construction.

5. Calculate cost of building materials using approved set of plans as guide and standardized formulas to prepare a bid for construction.

6. Check and receive material order using delivery invoice to insure that materials ordered were actually received.

7. Itemize material orders from plans and specifications for framing materials using appropriate tools and equipment to insure adequate materials to complete the job.

8. Fill out material order using itemized list to insure that all required materials will be on site when needed.

9. Identify actual sizes of milled lumber using measure tape to assure correct finished dimensions of the structure.

10. Follow oral instructions given by supervisors using oral feedback to assure that proper building procedures are followed.

11. Construct a structural unit using multiview drawings to assure that the unit will fit within assigned space.

12. Identify dimensioning methods using working drawings to insure that finished structural dimensions are correct.

13. Identify door and window specifications and locations using the plans to assure correct placement of materials.

14. Locate special installations using detail drawings to insure that installations are in correct locations.

15. Interpret instructions using pictorial exploded detail drawings to assemble a cabinet unit.

16. Determine the length of a scaled line using the architect's scale to assure correct interpretation of working drawings.

A. PLANNING PRIOR TO CONSTRUCTION (continued)

17. Sketch a rough detail (working) drawing using a pencil and paper to basis for actual construction of a structure or unit.

18. Sketch working drawings for cabinets using appropriate tools, equipment and supplies to conform to available space and design considerations.

19. Identify American standard plumbing symbols using AIA standards to insure correct usage of materials in finished structure.

20. Identify dimensions applicable to masonry materials using AIA standards to assure correct dimensions of materials.

21. Identify electrical symbols using National Electrical Code and AIA standards to assure correct usage and placement of electrical devices.

22. Identify heating, ventilating, and air conditioning installation symbols using ASHRAE and AIA standards to insure correct placement and type of each device.

23. Identify standard masonry symbols using AIA standards to assure correct placement and usage of masonry materials.

B. PREPARING THE SITE

1. Establish elevation reference points from a bench mark using builder's level or transit to determine contour of lot.

2. Establish footing grades using builder's level or transit to insure that finished structure elevations conform to working drawings.

3. Establish lot property lines using appropriate tools and equipment to assure that building lot does not intrude on adjacent property.

4. Supervise the excavation of a building site using drawings and specifications to meet standards required for the proper placement of footings.

5. Locate building site in relation to property line using local code specifications to insure that structure lies within property boundaries and conforms to plot plans.

6. Prepare applications for required construction inspections using appropriate forms to insure compliance with all applicable local and state building codes.

7. Supervise filling operations around foundation walls using appropriate tools and equipment to establish rough grade.

B. PREPARING THE SITE (continued)

8. Lay out building site using transit and local codes and specifications to properly orient structure.

9. Locate and mark excavation lines using appropriate tools and equipment to provide for correct location of footings and foundations.

10. Locate and square corners using triangulation, parallel, and diagonal methods to assure that the finished structure will be square and true.

11. Set grade stakes using appropriate tools and equipment to insure correct grading elevations from finished structure.

12. Install batter boards for rough excavation and footings using appropriate tools and equipment to assure correct locations of finished footings and foundation.

13. Install batter boards using appropriate tools and equipment to support building lines.

14. Supervise site preparation for slab-on-ground construction using appropriate tools and equipment to provide proper base.

C. INSTALLING INSULATION

1. Install weatherstripping using appropriate tools and equipment to properly seal opening from infiltration of air.

2. Install batt or blanket insulation using appropriate tools and equipment on all exterior walls to stop infiltration of air.

3. Install vapor barrier using appropriate tools and equipment over insulation to provide moisture seal.

4. Install blown or loose insulation using appropriate tools and equipment to raise the R-Value of the area filled.

5. Install foam insulation using appropriate tools and equipment to stop infiltration and increase R-value.

D. INSTALLING DRYWALL

1. Hang drywall using appropriate tools and equipment to provide a base surface for finished walls.

E. INSTALLING INTERIOR FLOOR COVERING

1. Install carpet and pad using appropriate tools and equipment to provide a decorative, durable finished floor surface.

E. INSTALLING INTERIOR FLOOR COVERING (continued)

2. Install parquet flooring using appropriate tools and equipment to provide a decorative durable finished floor surface.

3. Install tongue and groove flooring using appropriate tools and equipment to provide a decorative, durable finished floor.

4. Install plank flooring using appropriate tools and equipment to provide a decorative durable finished floor.

5. Install resilient floor covering using appropriate tools and equipment to provide a decorative, durable finished floor.

F. INSTALLING HEATING/COOLING SYSTEMS

1. Determine size of heating unit using Michigan energy code book to calculate total heat load.

2. Select appropriate heating and cooling system using duct plans to determine the most efficient delivery system.

3, Submit architectural plans using architectural specifications and local code ordinances to obtain approval from client.

4. Install cooling system in an existing forced air heating system using tools and equipment to provide air conditioning.

5. Size gas pipe using piping diagram to layout furnace installation.

6. Install vent using a blueprint and tools to deliver the air from the furnace.

G. ROUGHING IN HEATING AND COOLING SYSTEMS

1. Set furnace unit using tools to prepare the furnace for installation.

2. Cut openings for warm and cold air register using tools to install duct work.

3. Install plenums using a print or blueprint to deliver the heating and/or cooling.

4. Install round pipe runs using a print and tools to deliver the heating and/or cooling.

5. Install thermostat using a print and tools to control temperatures within a comfort range.

6. Install furnace using tools, equipment and print to maintain a relative humidity within comfort ranges.

G. ROUGHING IN HEATING AND COOLING SYSTEMS (continued)

7. Install packaged air-conditioning system using tools and equipment to maintain a temperature level.

H. INSTALLING AND SERVICING ELECTRICAL CIRCUITS, COMPONENTS AND MOTORS

1. Adjust v-belts tension using tools to ensure proper motor operation.

2. Connect service line to power source using tools to meet local code requirements.

3. Install conduit for power wiring using tools to ensure safety of equipment and personnel.

I. SERVICING CONTROLS

1. Test thermostat controls using a thermometer to determine the specified temperature ranges.

2. Adjust limit switch using a high temperature thermometer to open gas valve circuit.

3. Adjust gas pressure regulator using a manometer to maintain a pressure of 3 1/2 to 4 inches of water column from the valve.

4. Recondition a gas valve using a kit to replace worn parts.

5. Light pilot using manufacturer's instructions to provide a flame for the burner.

6. Adjust pilot using knowledge to ensure the generation of the proper milli voltage.

J. SERVICING RESIDENTIAL AIR CONDITIONING/HEATING SYSTEMS

1. Align blower motor using tools to reduce excessive shift and/or bearing wear to the motor.

2. Adjust primary air flow to the burner using air shutters to obtain maximum fuel efficiency.

3. Align flue using tools to carry the products of combustion out of the house.

4. Service burner using tools and equipment to ensure efficient operation.

5. Balance air flow of an entire system using an industry manual and a velometer to provide each area of the system with the required. C.F.M.

J. SERVICING RESIDENTIAL AIR CONDTIONING/HEATING SYSTEMS (continued)

6. Replace furnace filter using tools to ensure proper air movement throughout the system.

7. Clean main burner using cleaning equipment and tools to increase fuel efficiency.

8. Clean pilot orifices using tools to maintain proper flame direction on the thermocouple.

9. Insulate ducts using duct tape to reduce heat loss.

K. LANDSCAPING

1. Prepare finish grade using appropriate tools and equipment for proper water drainage and landscape design to provide for a base from which to landscape.

2. Layout and construct any special exterior features (walks, retaining walls, fencing, etc.) using blueprints and appropriate tools and equipment to meet landscape design specifications.

3. Locate and construct areas for groups of trees, shrub or flower plantings using appropriate tools and equipment to meet landscape specified on landscape blueprints.

4. Locate and plant trees, shrubs and flowers using appropriate tools and equipment to meet specifications on landscape plans.

5. Prepare earth for seeding by loosening and smoothing soil using appropriate tools and equipment to allow seed and fertilizer to be placed.

6. Apply a balance fertilizer using appropriate tools and equipment to strengthen soils ability to produce desired plantings.

7. Apply a blend of grass seed using appropriate tools and equipment to provide grass cover suitable to climate and suitable for establishing quick ground cover to stabilize the soil.

8. Install sod using appropriate tools and equipment to areas where immediate lawn is required.

L. OPERATING BUSINESS

1. Hire employee using appropriate standard to gainfully employ a person.

2. Orient new employees using appropriate standard to acquaint an employee.

L. OPERATING BUSINESS (continued)

3. Terminate employee using appropriate standards to release the person.

4. Establish and record pay scale and benefits for employees using standard forms to allow a method of bookkeeping.

5. Prepare employee payroll using appropriate forms to determine records required.

6. Prepare payroll records using appropriate forms to comply with records required.

7. Develop/maintain filing system using appropriate components to enable a person to locate components rapidly.

8. Develop employee work schedules using appropriate forms to enable referral and deployment of workers.

9. Assign personnel to duty positions using appropriate job descriptions to fill job appropriately.

10. Maintain time records using appropriate forms to allow ease of referral.

11. Inspect quality of work using specifications, standards, experience, to determine acceptable work.

12. Estimate cost of a job using labor, materials, standards, specifications, subs and experience to determine cost to complete the job.

13. Order equipment and supplies using needs and requirements to meet requirements to complete the job.

14. Negotiate credit using appropriate techniques to obtain agreeable credit.

15. Take inventory of materials and tools using existing materials and tools to record items on hand.

M. USING EMPLOYABILITY SKILLS

1. Investigate employment information using sources of employment information to identify employment opportunities.

2. Identify job requirements using health, physical, legal, education. and other occupational information to determine the requirements of an occupation.

3. Acquire wage information using available resources to determine the approximate entry wages, general wage range, and significant fringe benefits for an occupation.

M. USING EMPLOYABILITY SKILLS (continued)

4. Identify significant non-wage job characteristics using available resources to determine shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment and other significant job factors.

5. Explore employment opportunities using available resources to describe local, regional, and national employment opportunities for an occupation.

6. Analyze career ladder using available resources to describe job progression in an occupation.

7. Identify personal criteria with information about available alternatives using a decision-making situation and procedures and skills in decision-making to choose a job, further training or other alternatives.

8. Prepare a resume using personal information to apply for a job.

9. Write a letter of application using personal notes to apply/ inquire about a job.

10. Complete a job application using personal notes to apply for a job.

11. Demonstrate appropriate dress using a knowledge of job requirements to comply with standards of on-the-job dress and grooming.

12. Complete a job interview using communication and interpersonal skills to become employed.

13. Describe personal criteria using references to identify acceptable job offers.

14. Demonstrate interpersonal skills to achieve successful relationships with others.

15. Identify source of continuing education for an occupation using available resources to identify career ladder alternatives.

16. Describe job termination procedures using a knowledge of the occupational area to leave a particular job.

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 1

Task: Apply for permits in sequence of need using appropriate forms to comply with local building codes and requirements.

Achievement Indicators: The learner:

	Yes	No
1. Identified agency that issues permit -		
a. Health Permit	____	____
b. Culvert Permit		
c. Electrical Permit		
d. Plumbing Permit		
e. Mechanical Permit		
f. Temporary Service Permit		
g. Building Permit		
2. Obtained permit -	____	____
3. Prepared permit for filing which location of site, size of structure, owner, contractor, and dates -	____	____
4. Listed the cost of filing a permit -	____	____
5. Listed the agency that would issue the permit	____	____

Criteria: Competence in the task will be recognized when the building is accurate to lot number, block number and street number, and when the size of the building is stated on the permit, and is in agreement with the working drawings.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 2

Task: Interpret building codes using local code book to assure conformity with local and state laws.

Achievement Indicators: The learner:	Yes	No
1. Obtained a set of prints and code book -	____	____
2. Selected a construction feature from prints -	____	____
3. Found the regulation for this feature in the code book -	____	____
4. Wrote down the code regulation and listed where it could be found within the code book -	____	____

Criteria: Competence in the task will be recognized when the student has selected a construction feature regulated by codes and record the regulation from the code book and the regulation is correctly cited as to section, division, and content of the code book.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 3

Task: Interpret notations used on blueprints to assure that correct procedures and materials are used.

Achievement Indicators: The learner:	Yes	No
1. Obtained a set of working drawings -	____	____
2. Located notations -	____	____
3. Noticed placement of notations -	____	____
4. Listed the purpose of the notations -	____	____

Criteria: Competence in the task will be recognized when the student has located two notations and listed a function for each.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 4

Task: Estimate labor costs using plans and specifications to prepare a bid for construction.

Achievement Indicators: The learner:

	Yes	No
1. Determined particular unit of work from plans -	____	____
2. Calculated labor cost correctly -	____	____
3. Calculated unit cost from estimating manual correctly -	____	____
4. Considered variations -	____	____

a. Working Conditions
b. Availability of Labor
c. Climatic Conditions
d. Supervision

Criteria: Competence in the task will be recognized when the labor costs for a designated unit of work are calculated, and the estimate is without mathematical error.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 5

Task: Calculate cost of building materials using approved set of plans as guide and standardized formulas to prepare a bid for construction.

Achievement Indicators: The learner:	Yes	No
1. Obtained bill of materials -	____	____
2. Recorded the quantity of materials per item -	____	____
3. Calculated the number of pieces which were the same size correctly -	____	____
4. Calculated the cost of materials per item from the rate book correctly -	____	____
5. Determined the overall cost of materials correctly -	____	____

Criteria: Competence in the task will be recognized when the concrete is calculated in cubic yards, plywood, particle board, and hardboard are based on the square foot units, lumber costs are in board foot units, and moulding and trim cost figures are based on lineal foot units.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 6

Task: Check and receive material order using delivery invoice to insure that materials ordered were actually received.

Achievement Indicators: The learner:	Yes	No
1. Obtained itemized material purchase order -	____	____
2. Obtained the delivery invoice -	____	____
3. Checked delivery invoice with purchase order -	____	____
4. Checked material delivered against delivery invoice -	____	____
5. Recorded errors, if present -	____	____

Criteria: Competence in the task will be recognized if there is no errors or discrepencies in any part of the order.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 7

Task: Itemize material orders from plans and specifications for framing materials using appropriate tools and equipment to ensure adequate materials to complete the job.

Achievement Indicators: The learner:	Yes	No
1. Read the plans carefully -	____	____
2. Used proper units of measurement for materials -	____	____
3. Calculated and recorded the amounts and type of material needed for each category -	____	____

Criteria: Competence in the task will be recognized when the itemized quantity of framing materials is given without mathematical error, and the itemized list includes the following framing categories: sill and girders, floor joists, bridging, plywood sub flooring, wall framing, rafters and ceiling joists, sheathing, and fasteners.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 8

Task: Fill out material order using itemized list to insure that all required materials will be on site when needed.

Achievement Indicators: The learner:

	Yes	No
1. Obtained the materials list for typical residential structure and the material order form -	____	____
2. Recorded the specific quantities and types of material on the material order form -	____	____
3. Checked for errors -	____	____

Criteria: Competence in the task will be recognized when the student fills out the material order from a list of materials needed for a typical residential structure, and the material order will be in agreement with the list of materials.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	Duty No. A
	Task No. 9

Task: Identify actual sizes of milled lumber using measuring tape to assure correct finished dimensions of the structure.

Achievement Indicators: The learner:

	Yes	No
1. Identified actual sizes of material -	____	____
2. Listed nominal sizes of the material -	____	____

Criteria: Competence in the task will be recognized when the student gives a list of twelve nominal sizes of lumber, lists the actual size of the lumber, and ten of the twelve are correctly identified.

Tools and Equipment:	Resources:

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 10

Task: Follow oral instructions given by supervisors using oral feedback to assure that proper building procedures are followed.

Achievement Indicators: The learner:

	Yes	No
1. Listened to instructions -	____	____
2. Asked questions if the instructions were vague -	____	____
3. Completed work in terms of the verbal instructions -	____	____

Criteria: Competence in the task will be recognized when the student completes work in accordance with these instructions in lieu of written specifications, and the work will pass an inspection by the supervisor.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 11

Task: Construct a structural unit using multiview drawings to assure that the unit will fit within assigned space.

Achievement Indicators: The learner:	Yes	No
1. Obtained drawings -	____	____
2. Checked to see that all required parts of the unit were accounted for -	____	____
3. Read all detailed notes listed on the drawing -	____	____
4. Assembled parts of the unit in proper sequence and according to stated details on the drawings -	____	____

Criteria: Competence in the task will be recognized when the unit is assembled according to multiview drawing with the following standards applying: assembled unit will agree with overall unit dimensions, unit will be assembled in appropriate sequence.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 12

Task: Identify dimensioning methods using working drawings to insure that finished structural dimensions are correct.

Achievement Indicators: The learner:	Yes	No
1. Located specific dimensions on the plans -	____	____
2. Identified dimensions locating centers, overall sizes, edges of surfaces -	____	____

Criteria: Competence in the task will be recognized when all of the methods of dimensioning are identified.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 13

Task: Identify door and window specifications and locations using the plans to assure correct placement of materials.

Achievement Indicators: The learner:

	Yes	No
1. Located the window and door schedule -	____	____
2. Understood R.O. and manufacturer number, etc. -	____	____

Criteria: Competence in the task will be recognized when the specifications for the front entrance door and a bedroom window are recorded on a provided sheet and the listed specifications will be in agreement with the information on the window and door schedules.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 14

Task: Locate special installations using detail drawings to insure that installations are in correct locations.

Achievement Indicators: The learner:	Yes	No
1. Obtained a set of working drawings -	____	____
2. Asked instructor for the installation that was to be located -	____	____
3. Used working drawings and located the specified installation -	____	____
4. Recorded the exact room and the location within the room of the installation -	____	____

Criteria: Competence in the task will be recognized when the special installation requested by the instructor is located, and the exact room and the exact location within the room is given.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 15

Task: Interpret instructions using pictorial exploded detail drawings to assemble a cabinet unit.

Achievement Indicators: The learner:	Yes	No
1. Checked pictorial exploded detail drawing of a cabinet -	____	____
2. Listed the steps involved with assembling the parts of a cabinet -	____	____
3. Sequenced the steps to be followed in assembling parts of a cabinet -	____	____

Criteria: Competence in the task will be recognized when the steps for assembling parts of a cabinet are sequenced by instructions of the drawing.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 16

Task: Determine the length of a scaled line using the architect's scale to assure correct interpretation of working drawings.

Achievement Indicators: The learner:

	Yes	No
1. Selected a line -	____	____
2. Noted the scale of the line -	____	____
3. Found appropriate scale on architect's scale or mathematically calculated size -	____	____
4. Measured and recorded the length of the line -	____	____

Criteria: Comeptence in the task will be recognized when the lines on the drawing are measured and converted into feet and inches correctly.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 17

Task: Sketch a rough detail (working) drawing using a pencil and paper to provide a basis for actual construction of a structure or unit.

Achievement Indicators: The learner:	Yes	No
1. Determined overall size of the unit -	____	____
2. Determined size of material -	____	____
3. Sketched the outside frame correctly -	____	____
4. Listed overall dimensions -	____	____
5. Located any openings in the unit in the proper location -	____	____
6. Listed the detail dimensions -	____	____
7. Added details to the drawing -	____	____

Criteria: Competence in the task will be recognized when the sketched drawing illustrates the basic parts of a unit and the manner in which the parts fit together also the drawing should illustrate the method of joint construction and state the detailed and overall dimensions.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 18

Task: Sketch working drawings for cabinets using appropriate tools, equipment and supplies to conform to available space and design considerations.

Achievement Indicators: the learner:	Yes	No
1. Sketched necessary views of the cabinets -	____	____
2. Added the necessary dimensions of viewer -	____	____
3. Identified details in the form of special notes -	____	____

Criteria: Competence in the task will be recognized when the student has designed and sketched working drawings of a cabinet which include matching doors and drawers designed for symmetrical balance, detailed dimensions which will total up to overall dimensions, and special notes which include detailed instructions.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 19

Task: Identify American standard plumbing symbols using AIA standards to insure correct usage of materials in finished structure.

Achievement Indicators: The learner:

	Yes	No
1. Obtained a set of AIA plumbing symbol standards -	____	____
2. Identified assigned symbols as to type of device -	____	____

Criteria: Competence in the task will be recognized when the student identifies in writing all plumbing symbols included on the drawing.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 20

Task: Identify dimensions applicable to masonry materials using AIA standards to assure correct dimensions of materials.

Achievement Indicators: The learner:	Yes	No
1. Obtained a set of AIA masonry dimension standards -	____	____
2. Wrote appropriate dimensions matched to each assigned item -	____	____

Criteria: Competence in the task will be recognized when the student writes in the exact dimensions beside each item on the list.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 21

Task: Identify electrical symbols using National Electrical Code and AIA standards to assure correct usage and placement of electrical devices.

Achievement Indicators: The learner:	Yes	No
1. Obtained a set of National Electrical Codes and AIA electrical symbol standards -	____	____
2. Correctly identified, in writing, each assigned symbol -	____	____

Criteria: Competence in the task will be recognized when the student writes the name of each electrical symbol correctly.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 22

Task: Identify heating, ventilating, and air conditioning installation symbols using ASHRAE and AIA standards to insure correct placement and type of each device.

Achievement Indicators: The learner:	Yes	No
1. Obtained a set of ASHRAE and AIA heating, ventilating, and air conditioning standards -	____	____
2. Identified, in writing, each assigned symbol -	____	____

Criteria: Competence in the task will be recognized when the student has identified in writng eight of the ten symbols.

Tools and Equipment:	**Resources:**

Duty: Planning Prior to Construction	**Duty No.** A
	Task No. 23

Task: Identify standard masonry symbols using AIA standards to assure correct placement and usage of masonry materials.

Achievement Indicators: The learner:	Yes	No
1. Obtained a set of AIA masonry symbol standards -	____	____
2. Identified, in writing, the meaning of each assigned symbol -	____	____

Criteria: Competence in the task will be recognized when the student has described in writing eleven of the thirteen symbols.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 1

Task: Establish elevation reference points from a bench mark using builder's level or transit to determine contour of lot.

Achievement Indicators: The learner:	Yes	No
1. Referred to plot plan and foundation plan to determine the grade of first floor -	____	____
2. Located on existing building, pole, or tree the first floor grade point to be used for reference -	____	____
3. Projected measurements for other grade levels -	____	____
4. Set the transit in the center of the building layout and drove the stakes into each corner of the building -	____	____
5. Checked each of the corners against the reference grade point and against each other -	____	____
6. Drove other grade stakes as needed for footings and piers -	____	____
7. Checked accuracy of grade levels from time to time during construction -	____	____

Criteria: Competence in the task will be recognized when the construction elevations from the bench mark (+ .01" or ± 1/32" depending on type of rod) have been established.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 2

Task: Establish footing grades using builder's level or transit to insure that finished structure elevations conform to working drawings.

Achievement Indicators: The learner:	Yes	No
1. Checked plans for finish floor elevation -	____	____
2. Determined vertical distance of footing grade from finish floor elevation -	____	____
3. Set up builder's level or transit -	____	____
4. Marked rod for correct location of footing grade -	____	____
5. Took rod and established footing grade -	____	____
6. Checked for accuracy of measurements -	____	____

Criteria: Competence in the task will be recognized when footing grades, to a tolerance of ± 1/8" to ± 1/4" have been established.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 3

Task: Establish lot property lines using appropriate tools and equipment to assure that building lot does not intrude on adjacent property.

Achievement Indicators: The learner:	Yes	No
1. Checked plot plan for datum or reference points -	____	____
2. Checked property for existing hubs -	____	____
3. Used datum points along one side of property, and established the first property line -	____	____
4. Used the same datum points, and established the opposite property line -	____	____
5. Located datum points along the other side of the property and marked the third property line -	____	____
6. Used the same datum points, and marked the fourth property line -	____	____
7. Checked for accuracy of measurements -	____	____

Criteria: Competence in the task will be recognized when lot boundary lines are set to an accuracy of $\pm$ 1/2".

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
-	**Task No.** 4

Task: Supervise the excavation of a building site using drawings and specifications to meet standards required for the proper placement of footings.

Achievement Indicators: The learner:

	Yes	No
Supervised the following activities:		
1. Checked drawings and specifications -	____	____
2. Removed earth to specified width, length, and depth -	____	____
3. Stock-piled required amounts of earth according to specifications -	____	____

Criteria: Competence in the task will be recognized when the excavation of a building site is supervised to the following standards: correct depth is maintained over entire area within building lines, 2 feet beyond building site depth will be maintained for form work, batter boards will not be altered, drainage to allow water to run away.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 5

Task: Locate building site in relation to property line using local code specifications to insure that structure lies within property boundaries and conforms to plot plans.

Achievement Indicators: The learner:	Yes	No
1. Checked plans for location of structure and defined property -	____	____
2. Located the lot stakes -	____	____
3. Measured 30'-0' from one front corner lot stake, at right angles to the front property line. Drove in 2" x 2" stake at this point -	____	____
4. Remeasured exactly 30'-0' in at right angles from corner stake, and drove a nail in the top at the 2" x 2" stake to establish a point -	____	____
5. Set up a level instrument directly over the nail in a 2" x 2" stake -	____	____
6. Had a helper to stretch a tape from the nailhead in the opposite front corner lot, 30'-0' in from and at right angles to the front property line. The helper held the tape level and tight, with the 30' mark in -	____	____
7. Loosened the locking device on the level transit to permit the telescope to move in both horizontal and vertical planes, and pointed the scope so that the sight fell as close as possible to the 30' mark on the tape held by the helper. Locked the instrument in this position and then made vernier adjustment to set the vertical cross hair of the scope exactly on the 30' mark seen on the device -	____	____
8. Loosened the vertical locking device and moved the telescope into the vertical plane to establish points along that line to locate stakes -	____	____
9. Laid out remaining lines -	____	____

Criteria: Competence in the task will be recognized if the proper setback is maintained, the corner stakes are positioned according to the plans, and if size of structure (square footage) is in the allowances of local codes or zoning requirements.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** 8
	Task No. 6

Task: Prepare applications for required construction inspections using appropriate forms to insure compliance with all applicable local and state building codes.

Achievement Indicators: The learner:	Yes	No
1. Completed an application -	____	____
2. Received a valid permit -	____	____

Criteria: Competence in the task will be recognized when the application is prepared according to directions on the application.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 7

Task: Supervise filling operations around foundation walls using appropriate tools and equipment to establish rough grade.

Achievement Indicators: The learner:

	Yes	No
1. Referred to the plot plan and specifications -	____	____
2. Made sure that the concrete was properly cured -	____	____
3. Checked to see that the excavation was cleared of foreign material and was ready for fill -	____	____
4. Placed and covered drain tiles, if used, with aggregate before back-filling operation -	____	____
5. Placed the fill material carefully so that damage was avoided to foundation -	____	____
6. Was careful not to damage drain tile and plumbing -	____	____
7. Saved top soil for the finished grade -	____	____
8. Cleaned around the foundation wall after the back-filling was completed -	____	____
9. Checked to see that the final grade was according to specifications -	____	____

Criteria: Competence in the task will be recognized when filling operations are supervised to the following standards: clay, concrete, or corrugated plastic drainage lines are protected in a way that will prevent misalignment, walls are not damaged, and grade level is established to slope specifications.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 8

Task: Lay out building site using transit and local codes and specifications to properly orient structure.

Achievement Indicators: The learner:	Yes	No
1. Established point A on front property line with the proper amount of side setback -	____	____
2. Set up the instrument with the plumb bob centered over point A and adjusted level -	____	____
3. Disengaged the horizontal locking latch and brought the vertical cross hair to point B. Tightened horizontal-motion clamp screw; used the horizontal tangent screw and brought the vertical cross hair exactly to point B -	____	____
4. Turned the horizontal circle until a zero-degree mark of the circle coincided with the index mark of the vernier -	____	____
5. Loosened the horizontal clamp screw and turned the telescope so that it was approximately perpendicular to the front property line. Tightened the horizontal clamp screw and adjusted with the tangent screw to 90 degrees -	____	____
6. Drove a stake at point C along the line of sight; measured the distance from point A and established point C exactly by the coincidence of the vertical cross hir and an exact measurement and drove a tack home in the top of stake C -	____	____
7. Established points D and E in the same manner -	____	____
8. Moved the instrument to point B and centered it over the point, used the plumb bob and engaged the horizontal locking latch and adjusted the level -	____	____
9. Disengaged the locking latch and brought the vertical cross hair approximately to point A; tightened the horizontal clamp screw and used the tangent screw while bringing the vertical hair exactly to point A -	____	____
10. Adjusted the horizontal circle until zero was opposite the index on the vernier -	____	____

The learner:	Yes	No
11. Loosened the horizontal clamp screw and swung the telescope so that it was approximately perpendicular to the front building line. Tightened the clamp screw and completed the adjustment with the tangent screw to a reading of 90 degrees -	____	____
12. Measured along the line of sight, drove stakes at points F, G, and H. Established exact points on top of these stakes with the same procedure used for points C, D, and E following the dimensions that were given in the plans and drove tacks in at all required points for accuracy -	____	____
13. Checked the accuracy of the layout by measuring the diagonals. Diagonal C-H are equal to Diagonal F-E exactly -	____	____

Criteria: Competence in the task will be recognized if the minimum allowable set-back is maintained, minimum allowable distance from side to near boundary lines is maintained, corners at 90 degrees, footing lines are level and parallel to corresponding building lines, and all building lines are located to exact measurements.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 9

Task: Locate and mark excavation lines using appropriate tools and equipment to provide for correct location of footings and foundations.

Achievement Indicators: The learner:	Yes	No
1. Referred to plot and foundation plans -	____	____
2. Determined distance on outside of building required for working clearance in forming the footings and building foundation forms -	____	____
3. Used building lines as a reference for driving stakes in for the excavation lines -	____	____
4. Used transit or diagnoal method and checked for layout accuracy -	____	____
5. Removed the building lines for excavation -	____	____

Criteria: Competence in the task will be recognized when the clearance for form work is maintained 2 feet beyond the building line and the line is made visible by means of a line, stakes, or string.

Tools and Equipment:	**Resources:**

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Duty: Preparing the Site	**Duty No.** B
	Task No. 10

Task: Locate and square corners using triangulation, parallel, and diagonal methods to assure that the finished structure will be square and true.

Achievement Indicators: The learner:	Yes	No
1. Referred to plot plan -	____	____
2. Established one corner of building by measuring to existing datum points -	____	____
3. Established one building line from first corner using existing datum points specified on plot plan -	____	____
4. Established second corner of building along this building line -	____	____
5. Established second building line 90' to first building line, used the 3-4-5 method -	____	____
6. Located third building corner by measuring from first corner along second building line -	____	____
7. Located fourth building corner by using parallel method from second and third building corners -	____	____
8. Checked building layout and used diagonal method -	____	____

Criteria: Competence in the task will be recognized when the student establishes and squares four corners 90^0 at the intersection building by using triangulation, parallel, and diagonal methods for squaring corners.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 11

Task: Set grade stakes using appropriate tools and equipment to insure correct grading elevations from finished structure.

Achievement Indicators: The learner:	Yes	No
1. Cut stakes -	____	____
2. Determined location of grade stake(s) from plans and specifications -	____	____
3. Set grade stake at highest corner -	____	____
4. Set and leveled transit -	____	____
5. Calculated the desired elevation of grade stake -		
6. Took a transit reading from a bench mark -	____	____
7. Took a transit reading of grade at grade stake and marked a pencil line at base of stake -	____	____
8. Marked distance up or down on grade stake at desired elevation -	____	____

Criteria: Competence in the task will be recognized when the grade stake is marked with distance noted up or down to desired elevation.

Tools and Equipment:	**Resources:**

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Duty: Preparing the Site	**Duty No.** B
	Task No. 12

Task: Install batter boards for rough excavation and footings using appropriate tools and equipment to assure correct locations of finished footings and foundation.

Achievement Indicators: The learner:	Yes	No
1. Drove the batter board stakes as necessary around corners C, F, H, and E and also batter boards D1, G1, I1, and I2 -	____	____
2. Engaged the horizontal locking latch and checked the instrument for level-	____	____
3. Made a grade rod, according to the height of forms and established a top-of-batter-board mark, usually above and out of the way of the forms and marked this height on all the stakes that supported the batter boards -	____	____
4. Nailed horizontal batter boards to the established heights and braced securely. Stretched working lines between batter boards over the corner stakes. Used a level or a plumb bob and made line adjustments over the points on top of the stakes -	____	____
5. Made a saw kerf in the top of each batter board and marked the kerf "Building Line" or BL. This preserved the location of lines during construction and kept the lines from slipping out of place. Located points along intermediate batter boards after the corner batter boards were kerfed (C1 to E1, C2 to F2, and F1 to H1, and H2 to E2) by measuring. For example: point I1 was measured from keft C1, and point I2 was laid out with the same dimension from kerf E1 -	____	____

Criteria: Competence in the task will be recognized when batter boards, building lines and elevation points have been established with the following standards applying: building lines and batter boards are at the same elevation, corners are square, and length of lines are correct according to drawings.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 13

Task: Install batter boards using appropriate tools and equipment to support building lines.

Achievement Indicators: The learner:	Yes	No
1. Cut the stakes -	____	____
2. Cut the cross member(s) -	____	____
3. Set the stakes at corner 1, 6'-10' outside building lines -	____	____
4. Set stakes at corner 2 -	____	____
5. Nailed cross members to stakes -	____	____
6. Connected dryline to the cross member at corner 2 -	____	____
7. Extended dryline to the stake at corner 1 and over the batter board -	____	____
8. Marked dryline position on the batter board -	____	____
9. Hammered the nail in the batter board and left a 1/2" of nail head exposed -	____	____
10. Attached dryline to the exposed nail head -	____	____
11. Repeated steps 3-10 for remaining batter boards -	____	____

Criteria: Competence in the task will be recognized when drylines locate building corners.

Tools and Equipment:	**Resources:**

Duty: Preparing the Site	**Duty No.** B
	Task No. 14

Task: Supervise site preparation for slab-on-ground construction using appropriate tools and equipment to provide proper base.

Achievement Indicators: The learner:

	Yes	No
Supervised the following activities:		
1. Checked the plans for size of slab -	____	____
2. Located and staked corners for slab construction -	____	____
3. Graded to specified dimensions -	____	____
4. Compacted area that had been disturbed by grading -	____	____
5. Checked final grade for accuracy -	____	____

Criteria: Competence in the task will be recognized when site preparation for slab-on-ground construction has been supervised to the following standards: site was level, grading was done to the proper elevation, and grading was done to the proper dimension.

Tools and Equipment:	**Resources:**

Duty: Installing Insulation	**Duty No.** C
	Task No. 1

Task: Install weatherstripping using appropriate tools and equipment to properly seal opening from infiltration of air.

Achievement Indicators: The learner:	Yes	No
1. Measured height of door jamb -	____	____
2. Cut length of weatherstripping equal to jamb height -	____	____
3. Placed weatherstripping on jamb to inside of door stop -	____	____
4. Tacked weatherstripping every 2" along inside edge so that edge next to stop sprung outward -	____	____
5. Repeated procedures 1-4 for other jamb leg -	____	____
6. Repeated procedures 1-4 for jamb head -	____	____

Criteria: Competence in the task will be recognized when the weatherstripping allows door to close and seals out air around door edges.

Tools and Equipment:	**Resources:**

Duty: Installing Insulation	**Duty No.** C
	Task No. 2

Task: Install batt or blanket insulation using appropriate tools and equipment on all exterior walls to stop infiltration of air.

Achievement Indicators: The learner:	Yes	No
1. Checked R factor for insulation on plans -	____	____
2. Measured height of wall between plates -	____	____
3. Cut insulation 1 1/2" longer than measured height -	____	____
4. Recessed insulation 3/4" between studs -	____	____
5. Stapled edge of insulation to inside of studs -	____	____
6. Recessed insulation 3/4" on bottom and top plates -	____	____
7. Stapled insulation to top and bottom plates -	____	____
8. Repeated steps 2-7 until all walls were insulated -	____	____

Criteria: Competence in the task will be recognized when the batt or blanket insulation is installed properly and the R factor of insulation used complys with local building codes.

Tools and Equipment:	**Resources:**

Duty: Installing Insulation	**Duty No.** C
	Task No. 3

Task: Install vapor barrier using appropriate tools and equipment over insulation to provide moisture seal.

Achievement Indicators: The learner:

	Yes	No
1. Checked plans and specifications for location and type of material to be used -	____	____
2. Measured length of surface to receive vapor barrier -	____	____
3. Measured width of surface to receive vapor barrier -	____	____
4. Cut vapor barrier material to size -	____	____
5. Covered area with material -	____	____
6. Stapled material to studs, joists, or rafters for wall and ceiling surfaces -	____	____
7. Spread material flat over floor surfaces -	____	____

Criteria: Competence in the task will be recognized when the vapor barrier is tight and free of holes.

Tools and Equipment:	**Resources:**

Duty: Installing Insulation	**Duty No.** C
	Task No. 4

Task: Install blown or loose insulation using appropriate tools and equipment to raise the R-Value of the area filled.

Achievement Indicators: The learner:	Yes	No
1. Determined depth of insulation -	____	____
2. Checked R factor of insulation in specifications -	____	____
3. Distributed hoses -	____	____
4. Dumped bags into blower or cavity as recommended by manufacturer -	____	____
5. Blew insulation into cavity -	____	____
6. Filled cavity to determined level -	____	____

Criteria: Competence in the task will be recognized when the insulation is installed according to industrial standards.

Tools and Equipment:	**Resources:**

Duty: Installing Insulation	**Duty No.** C
	Task No. 5

Task: Install foam insulation using appropriate tools and equipment to stop infiltration and increase R-value.

Achievement Indicators: The learner:

	Yes	No
1. Filled cavity to recommended depth application -	____	____
2. Tooled off to proper level, while wet -	____	____
3. Cut with knife if allowed to dry -	____	____

Criteria: Competence in the task will be recognized when the foam insulation is installed according to industrial standards.

Tools and Equipment:	**Resources:**

Duty: Installing Drywall	**Duty No.** D
	Task No. 1

Task: Hang drywall using appropriate tools and equipment to provide a base surface for finished walls.

Achievement Indicators: The learner:	Yes	No
1. Checked plans and specifications for location and type of material to be used -	____	____
2. Measured length of section to receive drywall -	____	____
3. Measured width of section to receive drywall -	____	____
4. Cut drywall to size -	____	____
5. Measured location of cutouts (outlets, plumbing, etc.) -	____	____
6. Cut holes for outlets -	____	____
7. Applied adhesive to studs -	____	____
8. Positioned drywall butting factory edges where possible -	____	____
9. Nailed drywall every 8" along edges -	____	____
10. Nailed top and bottom at each wall stud -	____	____
11. Installed double nails at top center and bottom center of each wall stud -	____	____

Criteria: Competence in the task will be recognized when the surfaces are covered with no gaps or holes between sheets.

Tools and Equipment:	**Resources:**

Duty: Installing Interior Floor Covering	**Duty No.** E
	Task No. 1

Task: Install carpet and pad using appropriate tools and equipment to provide a decorative, durable finished floor surface.

Achievement Indicators: The learner:	Yes	No
1. Checked for rough surfaces and protrusions, repaired where necessary -	____	____
2. Cleaned subfloor -	____	____
3. Applied tack strip to appropriate areas -	____	____
4. Installed carpet pad. Taped all joints with tape and stapled pad to floor -	____	____
5. Unrolled and cut carpet where necessary -	____	____
6. Seamed carpet where necessary -	____	____
7. Used appropriate tools stretched carpet and fastened carpet tack strip -	____	____
8. Trimmed carpet where necessary -	____	____

Criteria: Competence in the task will be recognized when the carpet is properly seemed, stretched and secured over a stable carpet pad of appropriate thickness.

Tools and Equipment:	**Resources:**

Duty: Installing Interior Floor Covering	**Duty No.** E
	Task No. 2

Task: Install parquet flooring using appropriate tools and equipment to provide a decorative durable finished floor surface.

Achievement Indicators: The learner:	Yes	No
1. Cleaned subfloor -	____	____
2. Struck perpendicular lines 12" from adjacent walls -	____	____
NOTE: (Lines must be exactly 90^{o} from each other)		
3. Spread enough adhesive on floor for several tiles -	____	____
4. Set tile, tongue sides out into position -	____	____
5. Nailed through tongue edges -	____	____
6. Interlocked grooves of next tile tightly over tongues of preceding tiles -	____	____
7. Hammered with wood block if necessary for tight fit -	____	____
8. Nailed tile through tongue edges -	____	____
9. Repeated steps 2-6 until floor was completed working from starting corner -	____	____
10. Cut tiles to fit around vertical obstructions leaving 1/4"-1/2" gaps at edges for expansion -	____	____

Criteria: Competence in the task will be recognized when the parquet flooring tiles fit tightly together with each tile firmly attached to subfloor.

Tools and Equipment:	**Resources:**

Duty: Installing Interior Floor Covering	**Duty No.** E
	Task No. 3

Task: Install tongue and groove flooring using appropriate tools and equipment to provide a decorative, durable finished floor.

Achievement Indicators: The learner:	Yes	No
1. Chalked line perpendicular to joists at wall -	____	____
2. Measured distance from edge of floor to joist center -	____	____
3. Cut floor board to length -	____	____
4. Set board along chalk line, tongue side out -	____	____
5. Nailed board at each joist through tongue angling nail back through board and drove tightly -	____	____
6. Butted next floor board to end of preceding board -	____	____
7. Nailed as in step 5 -	____	____
8. Repeated steps 6-7 until row was complete -	____	____
9. Repeated steps 2-8 until floor was complete -	____	____
10. Drove boards with grooved edges tightly over tongues of preceding rows on all succeeding rows -	____	____
11. Hammered boards together -	____	____
12. Staggered end joints to different joists on alternate rows -	____	____

Criteria: Competence in the task will be recognized when the flooring is nailed at each joist with all joints tight.

Tools and Equipment:	**Resources:**

Duty: Installing Interior Floor Covering	**Duty No.** E
	Task No. 4

Task: Install plank flooring using appropriate tools and equipment to provide a decorative durable finished floor.

Achievement Indicators: The learner:	Yes	No
1. Determined flooring direction from plans and specifications -	____	____
2. Cleaned subfloor -	____	____
3. Installed building paper over subfloor -	____	____
4. Measured and cut planks -	____	____
5. Predrilled screw holes, if necessary -	____	____
6. Positioned plank -	____	____
7. Nailed plank staggering fasteners -	____	____
8. Countersunk nails -	____	____
9. Installed screws in predrilled holes -	____	____
10. Repeated steps 4-9 until floor was complete -	____	____
11. Filled nail holes with wood filler -	____	____
12. Cleaned screw holes -	____	____
13. Covered heads with glue -	____	____
14. Fitted wood plugs in holes -	____	____

Criteria: Competence in the task will be recognized when the plank flooring is installed according to specifications.

Tools and Equipment:	**Resources:**

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Duty: Installing Interior Floor Covering	**Duty No.** E
	Task No. 5

Task: Install resilient floor covering using appropriate tools and equipment to provide a decorative, durable finished flooring.

Achievement Indicators: The learner:	Yes	No
1. Cleaned floor -	____	____
2. Filled all cracks or damaged areas -	____	____
3. Measured area length and width at several places and determined widest area -	____	____
4. Cut piece from roll -	____	____
5. Removed base shoe mold -	____	____
6. Placed sheet goods in room and fit. Made sure all pieces fit contour of floor -	____	____
7. Pasted floor -	____	____
8. Rolled covering back into place and smoothed out all buckles and wrinkles -	____	____
9. Repeated same procedure at other end, rolled or folded back to the previously glued area -	____	____
10. Smoothed all wrinkles and buckles -	____	____
11. Rolled floor with roller -	____	____
12. Replaced base shoe molding -	____	____

Criteria: Competence in the taskwill be recognized when the floor covering is plumb, there is no paste oozing from cracks and there is no bubbles in floor.

Tools and Equipment:	**Resources:**

Duty: Installing Heating/Cooling Systems	**Duty No.** F
	Task No. 1

Task: Determine size of heating unit using Michigan energy code book to calculate total heat load.

Achievement Indicators: The learner:

	Yes	No
1. Determined type of construction -	____	____
2. Figured square footage -	____	____
3. Counted all window and door openings -	____	____
4. Used formula in book, determined air loss and infiltration -	____	____
5. Determined building orientation (latitude) -	____	____
6. Sized unit accordingly (BTU's) -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing Heating/Cooling Systems	**Duty No.** F
	Task No. 2

Task: Select appropriate heating and cooling system using duct plans to determine the most efficient delivery system.

Achievement Indicators: The learner:

	Yes	No
1. Determined building type -	____	____
2. Determined duct system to be used -	____	____
3. Selected type of furnace -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing Heating/Cooling Sytems	**Duty No.** F
	Task No. 3

Task: Submit architectural plans using architectural specifications and local code ordinances to obtain approval from client.

Achievement Indicators: The learner:

	Yes	No
1. Requested an engineered heating/cooling layout -	____	____
2. Determined a cost figure for a packaged delivered price to the site -	____	____
3. Consulted local heating/cooling contractor -	____	____
4. Consulted handbook -	____	____
5. Counseled client -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing Heating/Cooling Systems	**Duty No.** F
	Task No. 4

Task: Install cooling system in an existing forced air heating system using tools and equipment to provide air conditioning.

Achievement Indicators: The learner:

	Yes	No
1. Set condensing unit -	____	____
2. Cut hole for evaporating coil -	____	____
3. Set evaporating coil -	____	____
4. Installed suction line to coil -	____	____
5. Installed condensing unit to coil -	____	____
6. Ran wiring -	____	____
7. Charged unit -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing Heating/Cooling Systems	**Duty No.** F
	Task No. 5

Task: Size gas pipe using piping diagram to layout furnace installation.

Achievement Indicators: The learner:	Yes	No
1. Acquired piping materials -	____	____
2. Laid out piping according to piping diagram/specifications -	____	____
3. Placed first piece of pipe in vise and secured firmly -	____	____
4. Selected correct die for the pipe size -	____	____
5. Turned die stock in a clockwise direction until the pipe was threaded the same distance as the die -	____	____
6. Applied cutting oil every two revolutions -	____	____
7. Reversed the ratchet mechanism and turned die counter-clockwise until the die was removed -	____	____
8. Inspected the new threads for splits, cracks, or burrs -	____	____
9. Applied pipe dope to the threads and attached appropriate fitting -	____	____
10. Tightened fitting with a pipe wrench -	____	____
11. Repeated steps 3-10 as necessary until all piping was installed -	____	____
12. Ran a leak test -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing Heating/Cooling Systems	**Duty No.** F
	Task No. 6

Task: Install vent using a blueprint and tools to deliver the air from the furnace.

Achievement Indicators: The learner:	Yes	No
1. Located sites for vent installation -	____	____
2. Installed register boot -	____	____
3. Installed take-off in trunk line -	____	____
4. Connected round pipe from take-off to register boot -	____	____
5. Installed three #8 sheet metal screws in each joint -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Roughing in Heating and Cooling Systems	**Duty No.** G
	Task No. 1

Task: Set furnace unit using tools to prepare the furnace for installation.

Achievement Indicators: The learner:

	Yes	No
1. Removed packaging -	____	____
2. Set unit in appropriate spot in furnace room -	____	____
3. Cut opening for cold air return -	____	____
4. Connected unit to power source -	____	____
5. Connected exhaust flue to outside chimney -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Roughing in Heating and Cooling Systems	**Duty No.** G
	Task No. 2

Task: Cut openings for warm and cold air register using tools to install duct work.

Achievement Indicators: The learner:	Yes	No
1. Laid out and cut holes for register boots in each room -	____	____
2. Installed boots in each opening and attached in place temporarily -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Roughing in Heating and Cooling Systems	**Duty No.** G
	Task No. 3

Task: Install plenums using a print or blueprint to deliver t[illegible]eating and/or cooling.

Achievement Indicators: The learner:

	Yes	No
1. Assembled pre-packaged warm air plenum and installed directly under the location of the counterflow furnace -	____	____
2. Laid out, cut and installed a starting collar in the side or sides of the plenum to connect the rectangular ducts to the plenum -	____	____
3. Assembled snap lock type rectangular ducts -	____	____
4. Laid out, cut and installed take-offs in rectangular duct sections -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Roughing in Heating and Cooling Systems	**Duty No.** G
	Task No. 4

Task: Install round pipe runs using a print and tools to deliver the heating and/or cooling.

Achievement Indicators: The learner:

	Yes	No
1. Assembled snap lock type round pipes used supply air -	____	____
2. Installed 90^{o} adjustable elbows where needed -	____	____
3. Installed dampers in round supply air pipes -	____	____
4. Used flex-pipe where possible -	____	____
5. Connected take-offs to register boots -	____	____
6. Secured round pipe runs to floor joists with pipe hangers -	____	____
7. Taped all joints with 2" duct tape -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Roughing in Heating and Cooling Systems	**Duty No.** G
	Task No. 5

Task: Install thermostat using a print and tools to control temperatures within a comfort range.

Achievement Indicators: The learner:

	Yes	No
1. Shut power off -	____	____
2. Established location - 48" from floor -	____	____
3. Installed low voltage wiring from furnace location to thermostat location -	____	____
4. Connected conductors to thermostat -	____	____
5. Attached thermostat to pre-designated location -	____	____
6. Set heat anticipator adjustment to match current rating of device being controlled -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Roughing in Heating and Cooling Systems	**Duty No.** G
	Task No. 6

Task: Install furnace using tools, equipment and print to maintain a relative humidity within comfort ranges.

Achievement Indicators: The learner:

	Yes	No
1. Cut hole in the plenum -	____	____
2. Mounted unit -	____	____
3. Tapped water supply -	____	____
4. Ran tubing from water supply to humidifier -	____	____
5. Connected wiring -	____	____
6. Set desired humidity level -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Roughing in Heating and Cooling Systems	**Duty No.** G
	Task No. 7

Task: Install packaged air-conditioning system using tools and equipment to maintain a temperature level.

Achievement Indicators: The learner:

	Yes	No
1. Removed packaging -	____	____
2. Set unit in appropriate location -	____	____
3. Ran water lines to and from the unit -	____	____
4. Connected unit to power source -	____	____
5. Charged unit -	____	____
6. Started-up unit -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing and Servicing Electrical Circuits, Components and Motors	**Duty No.** H
	Task No. 1

Task: Adjust v-belts tension using tools to ensure proper motor operation.

Achievement Indicators: The learner:	Yes	No
1. Disconnected motor from power source -	____	____
2. Loosened pulley set screws -	____	____
3. Checked deflection at center of greatest free span of belt -	____	____
4. Adjusted deflection to manufacturer's specifications -	____	____
5. Tightened set screws -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing and Servicing Electrical Circuits, Components and Motors	**Duty No.** H
	Task No. 2

Task: Connect service line to power source using tools to meet local code requirements.

Achievement Indicators: The learner:

	Yes	No
1. Determined size of wire needed -	____	____
2. Measured length of wire -	____	____
3. Cut wire to measured length -	____	____
4. Separated twisted end of Triplex 2 feet -	____	____
5. Wrapped tape at point where twist began -	____	____
6. Fastened wedge clamp to neutral wire and fastened to house knob -	____	____
7. Stripped insulation from conductors to specified length on both SEC and Triplex -	____	____
8. Inserted wire into connectors and crimped -	____	____
9. Repeated for other current carrying wire, neutral wire and groundwire -	____	____
10. Insulated connectors with specified insulation -	____	____

CAUTION: This task should be performed by an electrician.

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Installing and Servicing Electrical Circuits, Components and Motors	**Duty No.** H **Task No.** 3

Task: Install conduit for power wiring using tools to ensure safety of equipment and personnel.

Achievement Indicators: The learner:	Yes	No
1. Determined location of meter base and circuit breaker panel -	____	____
2. Determined path for conduit from meter base to circuit breaker/fuse panel -	____	____
3. Measured conduit -	____	____
4. Cut and/or bent conduit -	____	____
5. Installed conduit -	____	____
6. Attached conduit to meter base and circuit breaker/ fuse panel -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Controls	**Duty No.** I
	Task No. 1

Task: Test thermostat controls using a thermometer to determine the specified temperature ranges.

Achievement Indicators: The learner:

	Yes	No
1. Attached thermometer to remote bulb with tape -	____	____
2. Started unit -	____	____
3. Directed discharge air over bulb and observed cut-out temperature on thermometer -	____	____
4. Observed cut-in temperature on thermometer -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Controls	**Duty No.** I
	Task No. 2

Task: Adjust limit switch using a high temperature thermometer to open gas valve circuit.

Achievement Indicators: The learner:

	Yes	No
1. Removed panels covering controls -	____	____
2. Reduced air flow across furnace -	____	____
3. Checked temperature at which limit controls open and close -	____	____
4. Checked heater cut-out specifications -	____	____
5. Adjusted limit switch to heater specifications -	____	____
6. Rechecked temperature rise and adjusted if necessary -	____	____
7. Replaced panels -	____	____
8. Reset thermostat to normal setting -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Controls	**Duty No.** I
	Task No. 3

Task: Adjust gas pressure regulator using a manometer to maintain a pressure of 3 1/2 to 4 inches of water column from the valve.

Achievement Indicators: The learner:

	Yes	No
1. Attached manometer -	____	____
2. Measured gas pressure -	____	____
3. Set gas pressure to manufacturer's specifications -	____	____
4. Removed manometer -	____	____
5. Ran a leak test -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Controls	**Duty No.** I
	Task No. 4

Task: Recondition a gas valve using a kit to replace worn parts.

Achievement Indicators: The learner:	Yes	No
1. Turned off gas supply and disconnected -	____	____
2. Removed gas valve -	____	____
3. Disassembled gas valve -	____	____
4. Cleaned filter -	____	____
5. Cleaned body with cleaning solution -	____	____
6. Dried all parts with compressed air and cloth -	____	____
7. Assembled valve with new gaskets -	____	____
8. Installed valve -	____	____
9. Connected gas supply -	____	____
10. Ran a leak test -	____	____
11. Attached manometer -	____	____
12. Lit pilot -	____	____
13. Fired off burners -	____	____
14. Checked gas pressure and adjusted, if required -	____	____
15. Turned off gas to burners -	____	____
16. Removed manometer -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

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Duty: Servicing Controls	**Duty No.** I
	Task No. 5

Task: Light pilot using manufacturer's instructions to provide a flame for the burner.

Achievement Indicators: The learner:

	Yes	No
1. Turned on gas -	____	____
2. Depressed gas safety by-pass -	____	____
3. Placed lit match to pilot assembly -	____	____
4. Lit pilot and held by-pass open 60 seconds -	____	____
5. Released by-pass -	____	____
6. Adjusted pilot to a soft blue flame -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Controls	**Duty No.** I
	Task No. 6

Task: Adjust pilot using knowledge to ensure the generation of the proper milli voltage.

Achievement Indicators: The learner:

	Yes	No
1. Checked pilot mounting -	____	____
2. Determined amount of flame covering thermocouple -	____	____
3. Disconnected thermocouple -	____	____
4. Checked voltage generated from thermocouple -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 1

Task: Align blower motor using tools to reduce excessive shift and/or bearing wear to the motor.

Achievement Indicators: The learner:	Yes	No
1. Loosened mount -	____	____
2. Adjusted position of direct drive motor to provide clearance for fan blades -	____	____
3. Inspected belt and pulley for wear, if applicable -	____	____
4. Positioned motor so belt runs straight -	____	____
5. Tightened motor -	____	____
6. Tightened electrical connections -	____	____
7. Set speed -	____	____
8. Secured all mechanical connections -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 2

Task: Adjust primary air flow to the burner using air shutters to obtain maximum fuel efficiency.

Achievement Indicators: The learner:	Yes	No
1. Lit gas burner -	____	____
2. Closed air chutter completely -	____	____
3. Opened shutter until all yellow tips were gone and flame was soft blue -	____	____
4. Locked shutter in position with locking screw -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 3

Task: Align flue using tools to carry the products of combustion out of the house.

Achievement Indicators: The learner:

	Yes	No
1. Set draft diverter on top of furnace -	____	____
2. Aligned flue with draft diverter -	____	____
3. Plumbed and leveled -	____	____
4. Fastened flue to draft diverter -	____	____
5. Tested draw in accordance with fire code specifications -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 4

Task: Service burner using tools and equipment to ensure efficient operation.

Achievement Indicators: The learner:

	Yes	No
1. Removed manifold -	____	____
2. Removed burners from heat exchanger -	____	____
3. Cleaned burner darts -	____	____
4. Replaced burners in heat exchanger -	____	____
5. Replaced manifold -	____	____
6. Aligned burners 90^{0} to manifold -	____	____
7. Secured all bolts, screws, etc. -	____	____
8. Adjusted primary air flow on burner -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

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Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 5

Task: Balance air flow of an entire system using an industry manual and a velometer to provide each area of the system with the required C.F.M.

Achievement Indicators: The learner:

		Yes	No
1.	Inspected the complete system; located all ducts, openings and dampers -	____	____
2.	Opened all dampers in the ducts and at the grilles -	____	____
3.	Checked the velocities at each outlet -	____	____
4.	Determined the free grille area -	____	____
5.	Calculated the volume of air flow per minute at each outlet -	____	____
	$\left(\frac{\text{area in sq. in.}}{\text{fpm x 144}} = \text{cu. ft./min. (volume per minute)}\right)$		
6.	Totaled the cu. ft./min. correctly -	____	____
7.	Determined the floor areas of each room and added to determine total area -	____	____
8.	Determined the proportion each room should have -	____	____
	$\left(\frac{\text{area of room x}}{\text{total floor area}} \quad \text{total cfm} = \text{cfm for room}\right)$		
9.	Adjusted duct dampers and grille dampers to obtain values -	____	____
10.	Rechecked all outlet grilles -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

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Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 6

Task: Replace furnace filter using tools to ensure proper air movement throughout the system.

Achievement Indicators: The learner:

	Yes	No
1. Located furnace filter -	____	____
2. Removed old filter -	____	____
3. Determined filter size -	____	____
4. Installed new filter -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 7

Task: Clean main burner using cleaning equipment and tools to increase fuel efficiency.

Achievement Indicators: The learner:

	Yes	No
1. Disassembled furnace -	____	____
2. Removed dust and rust from burner -	____	____
3. Cleaned flame ports -	____	____
4. Reassembled furnace -	____	____
5. Lit pilot -	____	____
6. Fired off furnace -	____	____
7. Observed flame -	____	____
8. Adjusted primary air as needed -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 8

Task: Clean pilot orifices using tools to maintain proper flame direction on the thermocouple.

Achievement Indicators: The learner:	Yes	No
1. Located pilot and removed -	____	____
2. Disassembled pilot -	____	____
3. Blew out foreign particles and restrictions -	____	____
4. Cleaned threaded connections -	____	____
5. Reassembled pilot -	____	____
6. Turned on gas and checked for leaks -	____	____
7. Lit pilot -	____	____
8. Adjusted pilot flame -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Servicing Residential Air Conditioning/Heating Systems	**Duty No.** J
	Task No. 9

Task: Insulate ducts using duct tape to reduce heat loss.

Achievement Indicators: The learner:

	Yes	No
1. Located uninsulated duct -	____	____
2. Measured circumference -	____	____
3. Cut insulation to length plus 3" overlap -	____	____
4. Stripped insulation from foil backing on 3" strip -	____	____
5. Wrapped insulation around duct -	____	____
6. Evened ends to lap over last piece of insulation -	____	____
7. Pulled tight and stapled flap to foil backing -	____	____
8. Taped ends -	____	____

Criteria: Competence in the task will be recognized when the work is done according to industry standards.

Tools and Equipment:	**Resources:**

Duty: Landscaping	Duty No. K
	Task No. 1

Task: Prepare finish grade using appropriate tools and equipment for proper water drainage and landscape design to provide for a base from which to landscape.

Achievement Indicators: The learner:	Yes	No
1. Went over design plan with excavating contractor to determine requirements -	____	____
2. Supervised finish grade excavation -	____	____
3. Used transit, determined that proper fall away from building had been accomplished -	____	____

Criteria: Competence in the task will be recognized when the finished grade is done properly.

Tools and Equipment:	Resources:

Duty: Landscaping	**Duty No.** K
	Task No. 2

Task: Layout and construct any special exterior features (walks, retaining walls, fencing, etc.) using blueprints and appropriate tools and equipment to meet landscape design specifications.

Achievement Indicators: The learner:

	Yes	No
1. Formed and poured walks and drives according to accepted practice and design plans -	____	____
2. Built retaining walls according to accepted practice and design plans -	____	____
3. Installed fencing according to accepted practice and design plans -	____	____

Criteria: Competence in the task will be recognized when the special exterior features meet landscape design specifications.

Tools and Equipment:	**Resources:**

Duty: Landscaping	**Duty No.** K
	Task No. 3

Task: Locate and construct areas for groups of trees, shrub or flower plantings using appropriate tools and equipment to meet landscape specified on landscape blueprints.

Achievement Indicators: The learner:	Yes	No
1. Performed all work according to accepted practices and design plans -	____	____

Criteria: Competence in the task will be recognized when the groups of trees, shrub and flower plantings meet planting specifications.

Tools and Equipment:	**Resources:**

Duty: Landscaping	**Duty No.** K
	Task No. 4

Task: Locate and plant trees, shrubs and flowers using appropriate tools and equipment to meet specifications on landscape plans.

Achievement Indicators: The learner:	Yes	No
1. Planted all plantings according to accepted practice, within planting season dates and according to plan -	____	____

Criteria: Competence in the task will be recognized when the work is done as specified on landscape plans.

Tools and Equipment:	**Resources:**

Duty: Landscaping	Duty No. K
	Task No. 5

Task: Prepare earth for seeding by loosening and smoothing soil using appropriate tools and equipment to allow seed and fertilizer to be placed.

Achievement Indicators: The learner:	Yes	No
1. Earth was loosened mechanically or by hand a few inches deep -	____	____
2. Earth was raked in a smooth even contour according to accepted practice and design plan -	____	____

Criteria: Competence in the task will be recognized when the earth is prepared for seeding according to landscaping specifications.

Tools and Equipment:	Resources:

Duty: Landscaping	Duty No. K
	Task No. 6

Task: Apply a balance fertilizer using appropriate tools and equipment to strengthen soils ability to produce desired plantings.

Achievement Indicators: The learner:	Yes	No
1. Analyzed or had soil analyzed to determine proper fertilizer for the soil -	____	____
2. Coordinated rate of application with needed strength -	____	____

Criteria: Competence in the task will be recognized when the work is done according to accepted landscaping standards.

Tools and Equipment:	Resources:

Duty: Landscaping	**Duty No.** K
	Task No. 7

Task: Apply a blend of grass seed using appropriate tools and equipment to provide grass cover suitable to climate and suitable for establishing quick ground cover to stabilize the soil.

Achievement Indicators: The learner:

	Yes	No
1. Determined requirements that seed needs to meet -	____	____
2. Applied according to accepted practice -	____	____
3. Applied thin cover of wheat or oat straw over completed seed bed. Was careful not to over apply	____	____
4. Watered according to accepted practice -	____	____

Criteria: Competence in the task will be recognized when the grass seed is planted correctly.

Tools and Equipment:	**Resources:**

Duty: Landscaping	**Duty No.** K
	Task No. 8

Task: Install sod using appropriate tools and equipment to areas where immediate lawn is required.

Achievement Indicators: The learner:	Yes	No
1. Figured amount of sod needed -	____	____
2. Prepared soil so as to be smooth, even and removed stones and other debris -	____	____
3. Placed strips of sod firmly next to each other, trimming with a utility knife -	____	____
4. Watered immediately and will for several days and as needed after that -	____	____

Criteria: Competence in the task will be recognized when the work is done according to landscaping standards.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 1

Task: Hire employee using appropriate standard to gainfully employ a person.

Achievement Indicators: The learner:	Yes	No
1. Determined there was a need to hire an employee -	____	____
2. Established work qualifications needed to fill the job -	____	____
3. Advertised the open job -	____	____
4. Accepted applications and resumes for specified time -	____	____
5. Evaluated applications -	____	____
6. Scheduled interviews -	____	____
7. Interviewed selected applicants -	____	____
8. Followed-up on references and prior work experience -	____	____
9. Selected applicant to be hired -	____	____
10. Notified applicant that had been selected -	____	____
11. Informed applicant of starting date, time, and other pertinent information -	____	____
12. Notified remaining applicants expressing gratitude for their interest in the company. Made them aware that their application would be held for future openings -	____	____

Criteria: Competence in the task will be recognized if the hiring is done in accordance with all governing labor practices and laws.

Tools and Equipment:	**Resources:**

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Duty: Operating Business	**Duty No.** L
	Task No. 2

Task: Orient new employees using appropriate standard to acquaint an employee.

Achievement Indicators: The learner:	Yes	No
1. Prepared briefing -	____	____
a. Gathered information -	____	____
b. Arranged information in a logical sequence -	____	____
c. Prepared an outline for the presentation -	____	____
d. Selected necessary training aids -	____	____
2. Presented briefing -	____	____

Criteria: Competence in the task will be recognized when a 10 minute briefing on the topic is prepared and presented.

Tools and Equipment:	**Resources:**

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Duty: Operating Business	**Duty No.** L
	Task No. 3

Task: Terminate employee using appropriate standards to release the person.

Achievement Indicators: The learner:	Yes	No
1. Documented all warnings -	____	____
2. Met with employee on a one-to-one basis -	____	____
3. Discussed the reason for the termination -	____	____
4. Documented the firing and filed the employee records -	____	____
5. Notified employee of actions by mail -	____	____
6. Completed necessary forms for local, state, and federal agencies as required -	____	____
7. Filed copy for your records -	____	____
8. Notified bookkeeper so company records could be adjusted to show termination of	____	____
9. Gave employee his severance pay -	____	____

Criteria: Competence in the task will be recognized when the termination of the employee is done in accordance with the established labor practices and laws.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 4

Task: Establish and record pay scale and benefits for employees using standard forms to allow a method of bookkeeping.

Achievement Indicators: The learner:	Yes	No
1. Established wage incentives -	____	____
2. Established and recorded base pay -	____	____
3. Established fringe benefits -	____	____
4. Established and record dollar value of fringe benefits -	____	____
5. Established and record tax advantages of fringe benefits -	____	____

Criteria: Competence in the task will be recognized when the developed pay scale and benefits assure competitive compensation for retention of qualified employees.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 5

Task: Prepare employee payroll using appropriate forms to determine records required.

Achievement Indicators: The learner:

	Yes	No
1. Recorded deducations and completed net pay for each employee:		
a. Income tax (federal and state and city if applicable) -	____	____
b. FICA tax -	____	____
c. Other taxes -	____	____
d. Other deductions -	____	____
2. Completed check for each employee:		
a. dated check -	____	____
b. filled in employee's name -	____	____
c. filled in amount -	____	____
d. wrote amount in words or used machine to imprint amount -	____	____
3. Footed columns of payroll register -	____	____
4. Proved footings -	____	____
5. Signed checks or gave to appropriate person for signature -	____	____

Criteria: Competence in the task will be recognized when the worker has completed and verified payroll records and wrote checks.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 6

Task: Prepare payroll records using approriate forms to comply with records required.

Achievement Indicators: The learner:	Yes	No
1. Matched time cards with employee earning record -	____	____
2. Computed gross pay -	____	____
3. Determined withholding from federal tax tables -	____	____
4. Computed FICA withholding -	____	____
5. Computed other withholding or adjustments -	____	____
6. Computed net pay -	____	____
7. Proved register -	____	____
8. Entered data on emplyee earning record and register -	____	____
9. Prepared check in amount of net pay -	____	____

Criteria: Competence in the task will be recognized when the payroll record is prepared.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 7

Task: Develop/maintain filing system using appropriate components to enable a person to locate components rapidly.

Achievement Indicators: The learner

	Yes	No
1. Analyzed record keeping requirements -	____	____
2. Scanned data/materials for possible classifications/ groupings -	____	____
3. Listed logical methods of filing, i.e., alphabetical, numerical, geographical, chronological, or functional -	____	____
4. Selected appropriate system and subsystem if applicable -	____	____
5. Wrote out plan -	____	____
6. Sorted and assembled data in accordance with system or method selected -	____	____
7. Prepared folders, labels, and index in accordance with method selected -	____	____
8. Filed the materials -	____	____
9. Performed file maintenance as necessary -	____	____

Criteria: Competence in the task will be recognized when the filing system has been developed.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 8

Task: Develop employee work schedules using appropriate forms to enable referal and deployment of workers.

Achievement Indicators: The learner:	Yes	No
1. Prioritized jobs to be accomplished -	____	____
2. Assigned employees to jobs consistent with their competencies -	____	____
3. Assigned employees to jobs according to priority -	____	____
4. Assigned employees to job according to time required to complete job -	____	____
5. Scheduled work around use of equipment and facilities -	____	____
6. Scheduled work around special occasions: i.e., holidays, customer convenience, etc. -	____	____
7. Revised schedule to insure completion of work scheduled date -	____	____

Criteria: Competence in the task will be recognized when the work schedule developed insures that all work is finished by scheduled completion dates.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 9

Task: Assign personnel to duty positions using appropriate job descriptions to fill jobs appropriately.

Achievement Indicators: The learner:	Yes	No
1. Assigned workers to jobs requiring their particular competencies -	____	____
2. Assigned workers to jobs according to urgency -	____	____
3. Assigned workers to jobs according to time required to complete job -	____	____

Criteria: Competence in the task will be recognized when the appropriate jobs and workers are matched.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 10

Task: Maintain time records using appropriate forms to allow ease of referal.

Achievement Indicators: The learner:

	Yes	No
1. Located all time sheets, cards, etc. -	____	____
2. Posted data on permanent time sheets -	____	____
3. Computed total time for pay period -	____	____

Criteria: Competence in the task will be recognized when the time records are maintained correctly.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 11

Task: Inspect quality of work using specifications, standards, experience, to determine acceptable work.

Achievement Indicators: The learner:

	Yes	No
1. Observed neatness of task being performed -	____	____
2. Made sure employee followed applicable safety rules -	____	____
3. Determined if task was completed in a reasonable length of time -	____	____
4. Checked to see if proper tools were selected and used correctly -	____	____
5. Determined if standard masonry practices were followed -	____	____

Criteria: Competence in the task will be recognized when the work has been observed and performance rated.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 12

Task: Estimate cost of a job using labor, materials, standards, specifications, subs and experience to determine cost to complete the job.

Achievement Indicators: The learner:	Yes	No
1. Studied all the drawings and specifications provided -	____	____
2. Drew up a list of any or all of the following needs -	____	____
a. branch circuit schedule		
b. lighting fixture schedule		
c. branch circuit materials schedule		
d. service, feeder, and panel schedule		
e. labor unit schedule		
3. Transfeered the above information to an estimating form, including:		
a. unit cost of materials -	____	____
b. material cost -	____	____
c. unit labor and hours -	____	____
d. labor cost -	____	____
4. Added all materials and labor cost -	____	____
5. When making the estimate for bidding:		
a. added over head -	____	____
b. added tax -	____	____
c. added the expected profit -	____	____
6. Submitted the estimate to the requesting authority -	____	____

Criteria: Competence in the task will be recognized when the estimate includes the cost of materials, cost of labor, overhead cost, and expected profit and is within ± 5% of that estimated by the architect or chief estimator.

Tools and Equipment:	**Resources:**

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Duty: Operating Business	**Duty No.** L
	Task No. 13

Task: Order equipment and supplies using needs and requirements to meet requirements to complete the job.

Achievement Indicators: The learner:	Yes	No
1. Identified appropriate	____	____
2. Completed heading of requisition(s) -	____	____
3. Specified quantity, item description(s) and price -	____	____
4. Reviewed requisition(s) for accuracy -	____	____
5. Obtained any necessary signatures on requisition(s) -	____	____
6. Kept copy of requisition(s) on file -	____	____
7. Prepared to mail designated copy of requisition(s) to supplier(s) -	____	____

Criteria: Competence in the task will be recognized when the order of equipment and supplies is placed correctly.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 14

Task: Negotiate credit using appropriate techniques to obtain agreeable credit.

Achievement Indicators: The learner:

	Yes	No
1. Determined amount of credit needed -	____	____
2. Made appointment with bank, loan agency, etc. -	____	____
3. Assembled data to show that company was a good credit risk -	____	____
4. Met with loan agency and presented proposal to loan agency for credit with data to substantiate request -	____	____
5. Evaluated proposals -	____	____

Criteria: Competence in the task will be recognized when the credit is negotiated and interest rates and payment schedules are analyzed from at least two sources.

Tools and Equipment:	**Resources:**

Duty: Operating Business	**Duty No.** L
	Task No. 15

Task: Take inventory of materials and tools using existing materials and tools to record items on hand.

Achievement Indicators: The learner:

	Yes	No
1. Sorted and separated the pieces of equipment -	____	____
2. Sorted and separated the materials -	____	____
3. Sorted and separated the supplies -	____	____
4. Counted and recorded the number of each item of equipment, materials, and supplies -	____	____
5. Recounted the number of each item comparing the second count to the record made of the first -	____	____

Criteria: Competence in the task will be recognized when the inventory of the equipment, materials, and supplies has been done.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 1

Task: Investigate employment information using sources of employment information to identify employment opportunities.

Achievement Indicators: The learner:

	Yes	No
1. Developed a list of the prime sources of information concerning opportunities for employment -	____	____
2. Described special procedures, if any, required to utilize services, information, etc. -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 2

Task: Identify job requirements using health, physical, legal, education, and other occupational information to determine the requirements of an occupation.

Achievement Indicators: The learner:

	Yes	No
1. Listed the significant requirements (health, physical, legal, education, etc.) of the appropriate occupation -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 3

Task: Acquire wage information using available resources to determine the approximate entry wages, general wage range, and significant fringe benefits for an occupation.

Achievement Indicators: The learner:

	Yes	No
1. Listed the approximate entry wages, general wage range, and significant fringe benefits for the appropriate occupation -	____	____
2. Compared these wages and fringe benefits with other selected occupations -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 4

Task: Identify significant non-wage job characteristics using available resources to determine shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment and other significant job factors.

Achievement Indicators: The learner:

	Yes	No
1. Listed and described the significant non-wage characteristics (e.g., shift requirements, union affiliation, apprenticeships, occupational hazards, characteristics of work environment, etc.) -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 5

Task: Explore employment opportunities using available resources to describe local, regional, and national employment opportunities for an occupation.

Achievement Indicators: The learner:

	Yes	No
1. Described the local, regional, and national employment opportunities for the appropriate occupation -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 6

Task: Analyze career ladder using available resources to describe job progression in an occupation.

Achievement Indicators: The learner:	Yes	No
1. Described the career ladder associated with the appropriate occupational area -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 7

Task: Identify personal criteria with information about available alternatives using a decision-making situation and procedures and skills in decision-making to choose a job, further training or other alternatives.

Achievement Indicators: The learner:

	Yes	No
1. Compared personal criteria with information about a job, further training or other alternatives -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 8

Task: Prepare a resume using personal information to apply for a job.

Achievement Indicators: The learner:

	Yes	No
1. Prepared a resume -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 9

Task: Write a letter of application using personal notes to apply/inquire about a job.

Achievement Indicators: The learner:	Yes	No
1. Wrote a letter of application/inquiry -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 10

Task: Complete a job application using personal notes to apply for a job.

Achievement Indicators: The learner:

	Yes	No
1. Completed a job application -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
-	**Task No.** 11

Task: Demonstrate appropriate dress using a knowledge of job requirements to comply with standards of on-the-job dress and grooming.

Achievement Indicators: The learner:	Yes	No
1. Described and/or dressed in the attire of the appropriate occupational area, including:		
a. grooming -	____	____
b. required health and safety equipment -	____	____
c. uniforms -	____	____
d. other _____ -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 12

Task: Complete a job interview using communication and interpersonal skills to become employed.

Achievement Indicators: The learner:

	Yes	No
1. Described and/or demonstrated appropriate characteristics for job applicants including:		
a. attire -	____	____
b. grooming -	____	____
c. conduct during the interview -	____	____
2. Described and/or demonstrated the interview process -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 13

Task: Describe personal criteria using references to identify acceptable job offers.

Achievement Indicators: The learner:

	Yes	No
1. Listed personal criteria (financial, social, etc.) which described a job offer -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 14

Task: Demonstrate interpersonal skills to achieve successful relationships with others.

Achievement Indicators: The learner:	Yes	No
1. Identified probable causes for conflicts and at least one possible action to relieve the conflict -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 15

Task: Identify source of continuing education for an occupation using available resources to identify career ladder alternatives.

Achievement Indicators: The learner:	Yes	No
1. Described the types and sources of related continuing education for the appropriate occupation and/or advancement within the career ladder associated with the occupation -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

Duty: Using Employability Skills	**Duty No.** M
	Task No. 16

Task: Describe job termination procedures using a knowledge of the occupational area to leave a particular job.

Achievement Indicators: The learner:	Yes	No
1. Described procedures and practices for terminating a job -	____	____

Criteria: Competence in the task will be recognized when the achievement indicators are performed according to the satisfaction of the supervisor.

Tools and Equipment:	**Resources:**

STUDENT ACHIEVEMENT RECORD

RELATED BUILDING TRADES

STUDENT _____

INSTRUCTIONS:

Mark each student's level of competence according to the following guide:

LEVEL	GUIDE
1	Student has been exposed to task
2	Task accomplished with assistance
3	Task accomplished to criteria by student
4	Ability to teach or demonstrate the task to others

TASK	LEVEL	DATE
A. PLANNING PRIOR TO CONSTRUCTION		
1. Apply for permits in sequence of need.		
2. Interpret building codes.		
3. Interpret notations.		
4. Estimate labor costs.		
5. Calculate cost of building materials.		
6. Check and receive material order.		
7. Itemize material orders from plans and specifications for framing materials.		
8. Fill out material order.		
9. Identify actual sizes of milled lumber.		
10. Follow oral instructions given by supervisors.		
11. Construct a structural unit.		
12. Identify dimensioning methods.		
13. Identify door and window specifications and locations.		

TASK	LEVEL	DATE
A. PLANNING PRIOR TO CONSTRUCTION (continued)		
14. Locate special installations.		
15. Interpret instructions.		
16. Determine the length of a scaled line.		
17. Sketch a rough detail (working) drawing.		
18. Sketch drawings for cabinets.		
19. Identify American standard plumbing.		
20. Identify dimensions applicable to masonry materials.		
21. Identify electrical symbols.		
22. Identify heating, ventilating, and air conditioning installation symbols.		
23. Identify standard masonry symbols.		
B. PREPARING THE SITE		
1. Establish elevation reference points from a bench mark.		
2. Establish footing grades.		
3. Establish lot property lines.		
4. Supervise the excavation of a building site.		
5. Locate building site in relation to property line.		
6. Prepare applications for required construction inspections.		
7. Supervise filling operations around foundation walls.		
8. Lay out building site.		
9. Locate and mark excavation lines.		
10. Locate and square corners.		
11. Set grade stakes.		
12. Install batter boards for rough excavation and footings.		
13. Install batter boards to support building lines.		
14. Supervise site preparation for slab-on-ground construction.		

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TASK	LEVEL	DATE
C. INSTALLING INSULATION		
1. Install weatherstripping.		
2. Install batt or blanket insulation.		
3. Install vapor barrier.		
4. Install blown or loose insulation.		
5. Install foam insulation.		
D. INSTALLING DRYWALL		
1. Hang drywall.		
E. INSTALLING INTERIOR FLOOR COVERING		
1. Install carpet and pad.		
2. Install parquer flooring.		
3. Install tongue and groove flooring.		
4. Install plank flooring.		
5. Install resilient floor covering.		
F. INSTALLING HEATING/COOLING SYSTEMS		
1. Determine size of heating unit.		
2. Select appropriate heating and cooling system.		
3. Submit architectural plans.		
4. Install cooling system in an existing forced air heating system.		
5. Size gas pipe.		
6. Install vent.		
G. ROUGHING IN HEATING AND COOLING SYSTEMS		
1. Set furnace unit.		
2. Cut openings for warm and cold air register.		
3. Install plenums.		
4. Install round pipe runs.		
5. Install thermostat.		
6. Install furnace.		
7. Install packaged air-conditioning system.		

TASK	LEVEL	DATE
H. INSTALLING AND SERVICING ELECTRICAL CIRCUITS, COMP-		
ONENTS AND MOTORS		
1. Adjust v-belts tension.		
2. Connect service line to power source.		
3. Install conduit for power wiring.		
I. SERVICING CONTROLS		
1. Test thermostat controls.		
2. Adjust limit switch.		
3. Adjust gas pressure regulator.		
4. Recondition a gas valve.		
5. Light pilot.		
6. Adjust pilot.		
J. SERVICING RESIDENTIAL AIR CONDITIONING/HEATING		
SYSTEMS		
1. Align blower motor.		
2. Adjust primary air flow to the burner.		
3. Align flue.		
4. Service burner.		
5. Balance air flow of an entire system.		
6. Replace furnace filter.		
7. Clean main burner.		
8. Clean pilot orifices.		
9. Insulate ducts.		
K. LANDSCAPING		
1. Prepare finish grade.		
2. Layout and construct any special exterior features.		
3. Locate and construct areas for groups of trees, shrub		
or flower plantings.		
4. Locate and plant trees, shrubs and flowers.		
5. Prepare earth for seeding by loosening and smoothing		
soil.		

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TASK	LEVEL	DATE
K. LANDSCAPING (continued)		
6. Apply a balance fertilizer.		
7. Apply a blend of grass seed.		
8. Install sod.		
L. OPERATING BUSINESS		
1. Hire employee.		
2. Orient new employees.		
3. Terminate employee.		
4. Establish and record pay scale and benefits for employees.		
5. Prepare employee payroll.		
6. Prepare payroll records.		
7. Develop/maintain filing system.		
8. Develop employee work schedules.		
9. Assign personnel to duty positions.		
10. Maintain time records.		
11. Inspect quality of work.		
12. Estimate cost of a job.		
13. Order equipment and supplies.		
14. Negotiate credit.		
15. Take inventory of materials and tools.		
M. USING EMPLOYABILITY SKILLS		
1. Investigate employment information.		
2. Identify job requirements.		
3. Acquire wage information.		
4. Identify significant non-wage job characteristics.		
5. Explore employment opportunities.		
6. Analyze career ladder.		
7. Identify personal criteria with information about available alternatives.		
8. Prepare a resume.		
9. Write a letter of application.		

TASK	LEVEL	DATE
M. USING EMPLOYABILITY SKILLS (continued)		
10. Complete a job application.		
11. Demonstrate appropriate dress.		
12. Complete a job interview.		
13. Describe personal criteria.		
14. Demonstrate interpersonal skills to achieve successful relationships with others.		
15. Identify source of continuing education for an occupation.		
16. Describe job termination procedures.		

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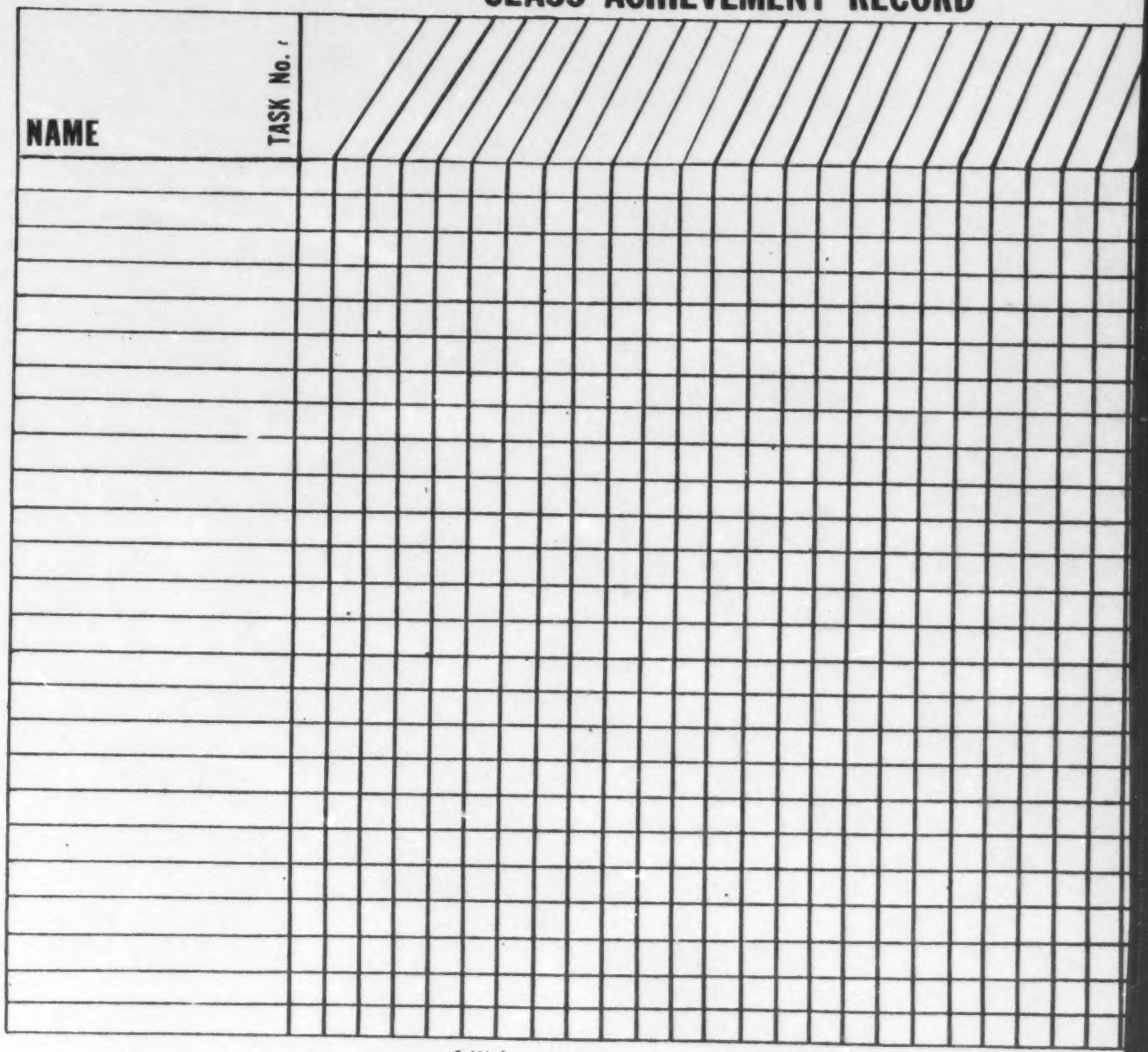
CLASS ACHIEVEMENT RECORD



GLOSSARY OF VOCATIONAL TERMS

Advisory Committee. An appointed group of concerned citizens and educators representative of the occupations for which training is given in the local school, organized for the purpose of helping to plan vocational programs and offering counsel on their development and operation.

Apprenticeship. An instructional program in which the learner works directly under a qualified craft worker to learn a trade.

Career Development. A lifelong process involving a series of experiences, decisions, and interactions, which, taken cumulatively, results in the formulation of a viable self concept and provides the means through which that self concept can be implemented both vocationally and avocationally.

Career Education. The total effort of public education and the community to help all individuals become familiar with the values of a work-oriented society, to integrate such values into their personal value systems, and to implement those values into their lives in such a way that work becomes possible, meaningful, and satisfying to each individual.

Career Interest. The student's decision to pursue a job description or cluster within a vocational education program area.

Cluster of Occupations. Occupations for which a common core of instruction can prepare, as for example automotive trades which prepares for such occupations as auto mechanic, auto body repairman, automotive services, auto inspector, and brake adjuster.

Completion. That statistic which describes individuals, including early leavers who have achieved their immediate objectives in preparation for entry or progressing in an occupational field and have left the vocational education program.

Cooperative Vocational Education. An instructional plan which combines learning experiences gained through regularly scheduled supervised employment in the community and vocationally oriented in-school instruction.

Coordinator (Cooperative Education). A member of a local school staff who teaches occupational and related subject content to students preparing for employment and coordinates the efforts of all helpful agencies which can assist in a training program designed to meet the needs of learners in a cooperative vocational education program. At times the coordinator may have varying degrees of responsibility in adult vocational education.

Course. A defined segment of a program.

Course Outline. An outline of subject matter to be presented or learning experiences planned for a course.

Course of Study. A guide prepared by administrators, supervisors, and teachers of a particular school or school system as an aid to teaching a given subject or area of study. More detailed than a course outline and includes statement of methods, materials, and equipment needed.

Curriculum. A sequence of educational and skill development experiences designed to accomplish a particular purpose. The curriculum for a program of vocational/technical education is designed to prepare an individual for entry, promotion, or upgrading in a specific occupation or cluster of occupations. (See definition of Cluster of Occupations.)

Disability. An injury or illness, temporary or permanent, which prevents workers from carrying on their usual occupations. A disability retirement is retirement because of physical inability to perform the job.

Disadvantaged. Disadvantaged persons are those who have academic, socioeconomic, cultural, or other handicaps that prevent them from succeeding in a regular vocational program designed for persons without such handicaps, and who for that reason require specially-designed educational programs and related services, or both, in order for them to benefit from a vocational program.

Discharge. Dismissal of a worker from employment. The term implies discipline for unsatisfactory performance and thus is usually limited to dismissals for such reasons as insubordination, absenteeism, or inefficiency.

Discrimination. Unequal treatment of workers in hiring, employment, pay or conditions of work because of race, national origin, creed, color, sex, age, union memebership activity, or any other characteristics not related to ability or job performance. Discrimination is prohibited by Federal, State, and local laws.

Duty. A large segment of work performed by an individual. It is one of the distinct major activities involved in the work performed, and it is composed of several related tasks.

Employer. General term for any individual, corporation, or other operating group which hires workers. The term "employer" and "management" are often used interchangeably.

Evaluation. A measuring or assessing of effectiveness. An on-going process by which effectiveness and progress are determined, used to guide change and offer directions for program modification and operation.

Exploratory Experiences. Those experiences in a variety of occupations, which help the students identify job traits in relation to their abilities and characteristics, and to assist them in making realistic and appropriate occupational choices.

Follow-Up Report. Usually a composite short-term or long-term report of former students indicating their present employment status or other present commitments (education, military, homemaking). More sophisticated follow-up studies seek to assess the effectiveness of the cooperative training experience to the student's present situation. Individual follow-up information is usually maintained in a student's record file.

Follow-Up Study. A study of the occupational status and progress of former students, as a means of evaluating effectiveness of the school's program of occupational preparation, of improving such preparation, and/or of determining needs of former students for further services.

General Advisory Committee. A committee that advises an institution as to its vocational/technical education activities overall. (See also; Occupational Advisory Committee).

Guidelines. The means by which significant characteristics in the evaluation of an institution or program are identified or measured.

Handicapped. Handicapped persons are those who are mentally-retarded, hard of hearing, deaf, speech-impaired, visually-handicapped, seriously emotionally disturbed, crippled, or other health-impaired persons who, by reason of their handicapping conditions, cannot succeed in a regular vocational or consumer and homemaking education program without special educational assistance, or who require a modified vocational program.

Hazardous Occupation. An occupation designated by State of Michigan and/or federal law to be considered dangerous to the health and well-being of minors.

Individualized Instruction. That type of instruction that provides techniques through which the teacher can work directly with individual students, as opposed to group instruction.

Inservice Teacher Education. All educational, and professional activities contributing to professional competencies which a person engages in after becoming employed, such as: formal course work, work experience, internships, practicums, seminars, and independent-individualized studies.

Internship. Student performs in approved job situation. Usually paid and given credit for the work. In-school instruction usually given before the work period and seldom tied in directly with job experiences. Typically one semester or more. Internship is a term used for collegiate experiences.

Job. The duties and tasks actually performed by a specific individual.

Job Analysis. See: Occupational Analysis.

Job Description. A written statement listing the elements of a particular job or occupation. The statement may include the purpose of the job, duties, equipment used, qualifications, training requirements, physical and mental demands, and working conditions.

Job Placement. Those organized activities performed by a guidance counselor or job placement coordinator designed to assist students in locating employment.

Job Type. A group of jobs that are composed of essentially the same significant duties and tasks.

Learning Resources. All textbooks, reference materials, equipment, supplies and other items and materials needed for successful achievement of learning objectives.

Manpower. People available to perform needed labor.

Management System. A technique employed to provide an organized method of accomplishing stated mission, goals, and objectives.

Minimum Wage. The lowest rate of pay, established by law or through collective bargaining, at which covered workers may be employed. The minimum wage is usually expressed as an hourly rate.

M.O.I.S. Michigan Occupational Information System.

National Occupational Competency Exam. A written and a performance exam developed by the National Occupational Competency Testing Institute, sponsored by T&I Education, for the purpose of determining the degree of competency that one has in a specific trade and industrial occupation.

Occupational Analysis. A technique for finding out what a worker in a specific occupation does and what he needs to know to perform his job efficiently, which is then used as a means of determining the teaching content in an occupational preparatory program.

Occupational Advisory Committee. A committee advising as to a program preparing for a particular occupation or cluster of occupations.

Occupational Competence. Includes technical knowledge and skills; manipulative skills; communication skills; human relations skills; work habits; and the ability to reason, to solve problems, to think independently, and to make judgments necessary for satisfactory employment in the occupation.

Occupational Field. A group of recognized occupations having many similarities, including the following characteristics in common; the type of work performed; the basic aptitudes, and the acquired knowledge and training required; the tools, machines, instruments, and other equipment used; and the basic materials used.

Occupational Objective. An occupational goal, selected by the student, the attainment of which is the purpose for his/her vocational instruction.

On-The-Job Training. Instruction in the performance of a sequentially planned task given a student-learner by the employer during the usual working hours of the occupation. Learning experiences at the training station comprises both the application of the theory of and the technical skill aspects of the learning situation, and/or the proper character, attitude and personality development of the student-learner as general goals of the training situation at the training station.

Occupational Information. Systematically organized data used by guidance personnel and others for the purpose of helping persons make a vocational choice. Material concerns the nature of the work, duties, responsibilities, and compensations involved in the several vocations, including information about employment outlook, promotional opportunities, and entrance requirements.

Occupational Objective. A specific recognized occupational goal, selected by the student, the attainment of which is the purpose of his vocational instruction. Also called: Career Objective.

Placement Coordinator. A person who provides local leadership to plan and initiate placement services.

Placement Services or Placement Activities. A series of coordinated activities for students planning further education or seeking part-time or full-time employment either for additional education, for on-the-job training or for earning a living.

Preparatory Instruction. Instruction preparing students for full or part-time employment. Also serves to prepare students to enter and advance in an occupation. Also serves to equip workers with new or different skills demanded by technological changes.

Preparatory Program. A preparatory program provides vocational instruction designed to prepare individuals for gainful employment as semi-skilled or skilled workers or technicians or semi-professionals in recognized occupations. Preparatory programs are provided in the school laboratory/classroom.

Professional Organizations. Groups of personnel interested in and working toward the improvement, advancement, and upgrading of activities, not only in their specific field, but also of activities in related fields of endeavor such as the American Vocational Association.

Program (Vocational Education). "Vocational program" means laboratory, simulation or instruction based upon individually designed learning experiences in a vocational subject preparing the student for competencies required in a recognized occupation coded in accordance with the most recent vocational education listing of programs by the United States Department of Education.

Related Vocational Instruction. In-school courses specifically designed to improve personal and social skills, provide needed basic education (remedial), and/or develop relevant occupational skills and knowledges. The course should be regularly scheduled, should complement the learning experiences at the training station, and should be planned and developed to meet the specific needs of the individual student. The content of this course should consist of the theory of the occupational skill, the specific related information, and the general related instruction necessary to achieve personal success in the world of work.

Resources. People, money and materials available to an institution in carrying out its purposes.

School Community. The total community from which the school draws students, support, and resources.

School District. An administrative unit at the local level which exists primarily to operate public schools or to contract for public school services. Normally, taxes can be levied by such units for school purposes. These units may or may not be coterminous with county, city or town boundaries. This term is used synonymously with the term "local basic administrative unit."

Skills. The acquisition of knowledge, ability, proficiency, dexterity and technical expertness that enables one to develop a learned power of doing a thing completely.

State Plan. The document submitted by the state board for vocational education to the U. S. Office of Education describing the state's vocational education program. Includes policies followed by the state in maintaining, extending, and implementing existing programs and establishing new programs to meet the intent of the Vocational Education Acts. Prerequisite for receiving federal funds under the Acts.

Survey, Community. A fact-finding study of socioeconomic conditions and resources, community agencies, industries, business, farming, institutional practices, problems and practices of families, etc., as they exist at a given time in a given community. It is generally used by the school as a guide in revising school offerings to meet local needs.

Survey, Occupational. A form of occupational census, taken by personnel trained to determine the number of qualified employees in a designated occupation in a specified geographic or economic area; and to evaluate the need for increasing or limiting the numbers available for employment in the occupations surveyed.

Task. A unit of worker activity that is intermediate in specificity between a function and a procedural work step or action. It is a discrete unit of work performed by an individual; that is, the unit usually has a definite beginning and ending, and it is performed within a limited period of time.

Task Analysis. A detailed listing of skills necessary to perform a clearly defined, specific job, organized into a logical sequence and which may be used for teaching employment, or classification purposes.

Task Inventory. An instrument used for conducting an occupational survey. It consists of items of identification and background information and a list of appropriate duty and task statements.

Teacher-Coordinator (Cooperative Vocational Education). A member of the local school staff who teaches technical and related subject matter to students preparing for employment and coordinates classroom instruction (related classroom) with learning activities at the training station. The coordinator is also responsible for the evaluation procedures of the program.

Trade and Industrial. Instruction planned to develop basic manipulative skills, safety practices, judgments, technical knowledge, and related occupational information for the purpose of preparing persons for initial employment in the trades and industrial occupations.

Training Agreement. A statement of fundamental agreements regarding the participation of a student in a work environment. Initiated by the school, the agreement reflects a voluntary and cooperative commitment on the part of the coordinator, employer, student, and parents/guardians.

Training Plan. A format for delineating, for each student, the learning experiences and tasks to be undertaken at the training station, often paralleled with classroom units of instruction. The training plan, cooperatively determined, usually becomes a part of the training agreement.

Training Station. The establishment providing learning experience for the student-learner.

VICA. Vocational Industrial Clubs of America. The youth organization for students at secondary and post-secondary levels who are in preparation for employment in trade & industrial occupations.

Vocational Education. Organized educational programs, services, and activities which are directly related to the preparation of individuals for paid or unpaid employment, or for additional preparation for a career requiring other than a baccalaureate or advanced degree.

Vocational Student Organizations. Organizations for student-learners that complement the vocational education program. Recognized student-learner organizations for vocational education are: DECA, Distributive Education Clubs of America; FFA, Future Farmers of America; FHA-HERO, Future Homemakers of America-Home Economics Related Occupations; HOSA, Health Occupations Students of America; OEA, Office Education Association at the post-secondary level in Michigan and BOEC, Business Office Education Clubs at the secondary level; VICA, Vocational Industrial Clubs of America. Organizations for students enrolled in vocational education programs, with national, state and local units, the activities of which are an integral part of the instructional program.

Work Experience and Career Exploration (WECEP). Program emphasizes learning experiences at the training station based on individual needs and provides learning experiences for those students whose needs cannot be served by regular cooperative education programs.

Work Experience Program. Students perform tasks of the actual job and may or may not be paid. Typically engaged in for general education values, including exploratory. Usually one semester or less. Limited school supervision; usually no related class.

Work Observation Program. Student observes work, does not perform tasks except to understand them. Unpaid. Plan is usually few weeks in length and may be tied in with a class in which occupational information is discussed.

Work-Study Program. A federal program designed to provide a vocational education student with employment in the public sector and supplemental income while attending school. The vocational program does not necessarily have to be related to the job.

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Distributed by:

Michigan Vocational Education
Resource Center
133 Erickson Hall
Michigan State University
East Lansing, Michigan 48824-1034
Phone: (517) 353-4397
Toll Free: 1-800-292-1606

Cover by: Dennis Greer, 11th Grade, VICA Member, Commercial Art Program, Crockett Vocational Technical Center, Detroit, MI.

Instructor: Mr. A. Noyer